Learning from co-housing initiatives

Between Passivhaus engineers and active inhabitants

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Lidewij Tummers

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Learning from co-housing initiatives

Between *Passivhaus* engineers and active inhabitants

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voorzitter van het College voor Promoties,
in het openbaar te verdedigen op
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Door

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In remembrance of Marijke (†2013),
visionary and true mentor

Preface

In my work as building engineer, I am most happy when working out a combination of location, building and utilities that creates optimal conditions for the envisioned users. The creativity of designers can make these aspects work together, but in our contemporary, complex and sectorised societies, this is an increasingly difficult task.

Self-organised housing initiatives shed a fresh light on this challenge, because their image of living conditions does not separate structural engineering from utilities engineering, nor oppose the interests of efficient producing to the quality requirements of long-term functionality. However, precisely for this reason, on the way to realisation of their housing project, such initiatives experience numerous frictions with professional partners and institutional entities. The building industry and spatial planning generally perceive residents as consumers or beneficiaries, rather than actors with a specific expertise. These observations formed the motivation for the research presented here.

To promote the end-user (of residential space) to become 'client', as Dutch housing policies have done since 2000, seems an obvious way to create customised living and working space. Many resident associations have shown this can be the case, however working on this research confirmed that this is not the ultimate solution. Decentralising the *technosphere*, enabling its appropriation by so-called 'non-professionals', has many implications, first because it questions public governance as mediator of conflicting interests, and second because there is always a certain amount of opportunist appropriation at the expense of so-called illiterate or vulnerable groups. Self-organisation therefore holds many controversies, which engineers need to be aware of.

Focussing on the 'bricks' rather than on the 'people', this thesis argues there are significant lessons to be learned from self-organised housing in Europe to accomplish the UN 'New Urban agenda'. The combined creativity of residents and their technical advisors observed in the case-studies holds the promise of adequate local solutions for primary needs such as water, energy and shelter. Although this book is delivered for an academic context, I hope it may also be of use and encouragement for residents and engineers working on environments with low environmental- but positive human impact.

Acknowledgements

Writing a PhD is a journey with many unexpected turns. And, as Myra Römer observes[1], the length of the journey depends on the company along the way.
I was fortunate in finding many critical friends on my path who –often unknowingly- nudged me forward or pushed me off track into new directions. While it is impossible to name every single one, I would like to thank especially the following persons:

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I am indebted to the residents who make co-housing happen, especially those who shared their experiences for the benefit of this research. Their individual names are for privacy reasons not mentioned here.

Many thanks to my promotors for the time they have squeezed out of their busy schedules:

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To my nearest and dearest Katja, without whom this would not have been achieved, I can only say*: Liefste echtgenote, het boek is daar, nu eindelijk tijd voor ons eigen samenhuizen...*

1 Verhalen van FIta, 2005

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Samenvatting

De opgave: energie transitie en meer partikulier opdrachtgeverschap in de woningbouw

Sinds de UN wereld top over Klimaatverandering (Paris 2015) en Habitat (Quito 2016), nemen veel Europese steden een aktieve rol om de internationaal overeengekomen duurzaamheids doelstellingen te halen. Deze doelen zijn samengevat in de zo-genoemde 'New Urban Agenda'. Tegelijkertijd is de stedelijke woningmarkt steeds moeilijker toegankelijk voor huishoudens met lage, maar ook middenklasse inkomens. Als antwoord op problemen zo als gebrek aan woonruimte en hoge energie-rekeningen, nemen (groepen van) huishoudens het initiatief om (gezamenlijk) een woningbouw project te creeren en te beheren. Het voorliggende onderzoek richt zich op verschillende generaties projecten in collectief eigen beheer, verder aangeduid als 'co-huisvesting'. Elk van deze initiatieven ontstaat uit specifieke organisatoriese, functionele en bouwkundige omstandigheden, die resulteren in verschillende vormen van zelf-organisatie, functie menging en ruimtes of installaties voor gezamenlijk gebruik.

Dit onderzoek biedt een analyse van co-huisvesting als opkomende trend in Europa, om de implicaties hiervan voor stedelijke ontwikkeling, energie transitie and klimaatverandering beter te begrijpen. Co-huisvesting is een aktueel en waardevol onderzoekgebied, omdat de bewoners 'prosumers' worden; zij verenigen de aanbod (productie) en vraag (consumptie) zijde van energie, woningen en diensten in hun projekten. Zij worden daarom steeds meer gezien als partners in de co-creatie en het beheer van stedelijke ruimte.

Tot voor kort heeft het technische ontwerp van co-huisvesting nog weinig aandacht gekregen, Dit is wellicht te wijten aan het relatief geringe aantal projecten, waardoor mogelijke effecten op de stad of de nationale energie-cijfers beperkt lijken. Ondanks de beperkte omvang, zijn er twee gebieden waar co-huisvesting een belangrijke factor kan zijn in de stedelijke ontwikkeling: enerzijds ontwerp en beheer van (semi-)openbare ruimte ingericht op klimaatbeheersing en -adaptatie, anderzijds de overgang naar ook in energetisch opzicht zelfvoorzienende woningbouw. Op basis van empiries materiaal voor dit onderzoek blijkt dat co-huisvesting projecten relevante modellen en lessen bevatten om de energie-vraag te verminderen en hernieuwbare schone energie in de woningbouw te integreren. Ingenieurs kunnen van co-huisvesting pioneers leren, en hebben vooral de opgave deze ervaringen te vertalen naar bredere toepassing om de doelstellingen voor energie-transite te halen en duurzame steden te bevorderen.

co-huisvesting onderzoek, dat vooral plaatsvindt in de sociale wetenschappen, is een snel groeiend kennisveld. Het voorliggende onderzoek voegt een nieuw perspectief toe door de technische aspecten van co-huisvesting te belichten. Het gebruikt daarbij een interdisciplinair kader, en is geplaatst in de Europese context. Deze dissertatie analysereert de fysieke kenmerken van de projecten, en hoe deze tot stand komen in architectonische en technische ontwerpprocessen (de technosfeer). De aktieve bewonersgroepen treden op als 'niche innovators' van dese processen. Kernvraag is dan ook hoe het bouwkundig en installatie ontwerp vann co-huisvesting wordt beinvloed door de permanente dialektiek tussen (micro-) actors and (macro) instituties, in dit geval tussen bewoners initiatieven en huisvesting- en energie voorziening. De dissertatie biedt een nieuwe interpretatie van de projecten en hun vertoog, met inbegrip van de institutionele zowel als de technische context. Beide zijn nodig om de besluitvorming rond vernieuwbare energiebronnen en energie-infrastructuur in the projecten te kunnen duiden. De keuzes die worden gemaakt gedurende het ontwerp en bouwproces zijn alleen het gevolg van de doelstellingen en opvattingen (bijvoorbeeld over duurzaamheid) van de bewoners. Zulke keuzes worden sterk bepaald door aan de technosfeer gerelateerde instituties, zoals toeleverings industrie van de bouwsector, energie- of (afval)water netwerken en bedrijven, en bouw- en grondgebruik regelgeving. De professionele partners voor de co-housing projekten, bijvoorbeeld woningbouw corporaties en ingenieurbureaus, opereren eveneens binnen de institutionele context, maar hun positie is anders dan die van bewoners. Zij zijn bijvoorbeeld sterker verankerd in of gecommitteerd aan kaders gesteld door de overheid (bijvoorbeeld de Wet Toegelaten Instellingen Volkshuisvesting) of beroeps organisaties (zoals KIVI).

Om de analyse van deze dynamiek te structureren, onderscheid het onderzoek drie onderling verbonden aspecten:

- ACTEUREN / betrokken bij de (realisatie van) projekten; het alledaags handelen van bewoners en de professionele partners in co-creatie.

- CONTEXT / de project-overschrijdende krachten, in het bijzonder de macro-institutionele regimes. Hieronder vallen ook cultureel bepaalde opvattingen over duurzaamheid, technologie, participatie, rolverdelingen, delen/noaburskap, en zo voort.

- TECHNOSFEER / hier met name bouwkundig en installatie-technische aspecten, in het bijzonder energie-gerelateerd ontwerp en installatie van de co-huisvesting projekten.

Methode: empirische basis

Het onderzoek maakt vooral gebruik van kwalitatieve methoden, omdat voldoende en betrouwbare kwantitatieve data (nog) niet beschikbaar zijn. Om effectieve 'low-impact' energie-oplossingen voor co-huisvesting te ontwikkelen, zijn kwantitatieve data echter onmisbaar. Deze dissertatie bevat daarom een deelstudie over de mogelijkheden en valkuilen om adequate cijfers te accumuleren.

Empirisch materiaal over negen Nederlandse projekten vormt de kern van het onderzoek (appendix). Daarnaast is gekeken naar referentie-projekten in landen waar co-huisvesting het meest zichtbaar in opkomst is: België, Duitsland, Frankrijk, Zwitserland, en het Verenigd Koninkrijk.

Op grond van mijn eerdere beroepservaring (als raadgevend ingenieur), lag het gebruik van plandocumenten als kennisdrager voor de hand. De hieruit verzamelde informatie is geverifieerd middels projekt bezoeken en semi-gestructureerde interviews. In combinatie met een literatuuronderzoek kwam hieruit onder meer naar voren dat het ervaringen met het planproces, en de gekozen oplossingen weliswaar door de projecten gedeeld worden, maar dat over feitelijke effectiviteit en duurzaamheid zeer weinig bekend is. Dit vormde het vertrekpunt voor een aantal thematische deelstudies, die resulteerden in collegiaal besproken publikaties.

Door analyse van beleids documenten en programma-evaluatie rapporten is de stand van energie-efficient bouwen in Nederland gereconstrueerd voor verschillende perioden, zodat de kwaliteiten van de co-huisvesting projecten gerelateerd konden worden aan de standaard in de tijd van hun ontstaan. Hiermee tekenden zich tevens verschillende generaties, of typologieën, van bewoners-gestuurde huisvesting af, waaruit de casussen zijn geselecteerd. Daarnaast werd duidelijk dat co-huisvestingsprojecten proportioneel over-vertegenwoordigd zijn in overheidsprogramma's die energie-efficient en duurzaam bouwen stimuleren. Dit fenomeen is ook vastgesteld in andere Europese landen, wat er op wijst dat co-huisvesting initiatieven inderdaad als niche innovators in energie-transitie kunnen worden opgevat. Internationaal vergelijk is verder gebruikt om de specifieke kenmerken en ontwerp principes voor co-huisvesting te herkennen, en te onderscheiden van generieke woningbouw kenmerken zoals die door de nationale Bouwetgeving en conventies worden voorgegeven.

Bevindingen: niche innovatoren in stedelijke ruimte en energie

Uit het onderzoek kwam sterk naar voren dat vooral de institutionele omgeving invloed heeft op het ontwerp van co-huisvesting projecten, bijvoorbeeld door de eisen die verbonden zijn het verkrijgen van een bouwvergunning, woning toewijzing systemen, of prioriteiten in budgetallocatie en subsidie-regelingen. Deze structurele institutionele krachten maken deel uit van nationale planning regimes; lokaal bestuur and stedelijke ontwikkelings beleid spelen een prominente rol. Voor co-huisvesting initiatieven betekent dit in de praktijk zowel kansen als belemmeringen. Maar ook kwam naar voren dat de co-huisvesting trend onverwachte effecten heeft, bijvoorbeeld: In Nederland heeft bouwen in eigen beheer geleid tot een meer gedifferentieerd aanbod op de woningmarkt, beschreven in hoofdstuk 7 dat daarvoor een aantal 'hybride' typologieen benoemt. In andere landen hebben co-huisvesting networken bijvoorbeeld invloed gehad op de woningwet (Frankrijk), huisvestingsbeleid (België), woning typologie (Zwitserland) of energie standaards (Duitsland).

In de interviews benadrukten planners en ontwikkelaars vooral de lastige kanten van bewoners zeggenschap, zoals instabiele trajecten. langdurige groepsprocessen, korte-termijn denken en orientatie op de kleine schaal. De casussen spreken deze zienswijze tegen: de meeste gerealiseerde projecten bestaan lang en hanteren een integrale, lange termijn aanpak ook wat betreft duurzame leefstijl.

Sociologisch-juridisch onderzoek heeft laten zien hoe sterk institutioneel verankerde concepten, zoals 'eigendom' en 'privé sfeer', worden uitgedaagd door co-huisvesting. Gerelateerd aan de technosfeer in co-huisvesting beinvloedt dit bijvoorbeeld realisatie en ontwerp van gezamenlijke ruimtes en infrastructuur, waarmee co-huisvesting zich onderscheid van zogenoemde 'gated communities' en Vereniging van Eigenaren. Een belangrijke kwaliteit van co-huisvesting is de 'meent' (common) of semi-openbare buitenruimte, gebruikt als (speel)tuin en gerealiseerd door beperkt, perifeer geclusterd parkeren. De inrichting van zulke gebieden dragen bij aan de stedelijke kwaliteit bijvoorbeeld door het reduceren van warmte-stress, het faciliteren van ontmoetingen tussen buren en de (motorische) ontwikkeling van kinderen. Samen met het gebouwde volume, bieden zij ook ruimte voor het toepassen van klimaat-ontzienende technologieen, zoals zone-energie en zuivering of hergebruik van (hemel)water.

Op basis van het veldwerk kan vastgesteld worden dat de mogelijkheden die co-huisvesting biedt om de klimaatdoelen dichterbij te brengen tenmisnst wat betreft energie-voorziening nog niet optimaal worden benut. Omdat verdergaande technologische innovaties wenselijk zijn, kunnen ingenieurs een belanrijke rol spelen in de co-creatie van nieuwe, low-impact, woningbouw modellen.

Conclusies: ingenieurs en bewoners tussen netwerk en projekt

In de hier bestudeerde cassusen, zijn de toegepaste (energie-)technieken op zichzelf niet innovatief, daar bewonersgroepen zich in de regel geen ontwikkeltrajecten of financiele risikos kunnen veroorloven. Maar de manier waarop over de toepassing en het onderhoud van deze technologien wordt besloten in bewoners-gestuurde processen, opent nieuwe perspectieven voor het uitrusten van woningbouw clusters. Juist deze zelf-sturing maakt het mogelijk de selectie en het beheer van bouw materialen, klimaatregeling en comfort eisen beter op elkaar af te stemmen. Hiermee kan aanzienlijk betere energie-prestatie bewerkstelligd worden dan door alleen aan het gebouw te rekenen.

Bovendien bieden geclusterde woningen, vanuit een ingenieurs perspectief, extra mogelijkheden voor de toepassing van duurzame energie systemen and lokaal hergebruik van water en materiaal. Door de cluster te beschouwen als schaal tussen (individuele) eindgebruiker en (regionale) infrastructurele netwerken, kan ontwerp zich richten op het creeren van korte kringlopen voor specifieke stromen, zoals warmte of hemelwater. Dit is relevant voor co-huisvesting, maar ook voor stedelijke woonomgevingen, die veronden moeten worden aan (toekomstige) intelligente netwerken ('smart grids') afgestemd op gedecentraliseerde energie voorziening. Technische opties voor het opslaan, bufferen en piek afroming, cascaderen van energie-aanbod zijn gebaat bij zulke 'intermediairs', bijvoorbeeld micro-warmte netwerken and zonnestroom cooperatieven. Op deze manier krijgen de co-huisvesting clusters een plek tussen (energie)bron, netwerk en consument op een ruimtelijk schaalniveau dat zich leent voor zelfbeheer, en tegelijkertijd de integratie van productie en gebruik van stedelijke stromen bevordert.

Essentieel voor stedebouwkundig en technische infrastructuur ontwerpers and installatietechnische ingenieurs is het gedeelde ontwerp-proces, door de schalen heen. Daarvoor zijn nieuwe ontwerp en communicatiemethoden nodig waarbij ook bewoners aanschuiven. Co-creation vereist de institutionele ondersteuning van co-huisvesting groepen en andere bewoners om collectief op te treden als 'opdrachtgever'. Op dit moment is collectief optreden niet gebruikelijk, en nauwelijks geregeld in de European regelgeving, financiele markten en (local) beleid.

De huidige institutionele condities leiden er toe dat co-huisvesting initiatieven aanzienlijk sociaal en cultureel kapitaal moeten mobiliseren om tot realisatie te komen. Gedurende het plan process sneuvelen regelmatig sociale en duurzame ambities. Wanneer co-huisvesting op deze manier blijft groeien, dan kan dit leiden tot meer stedelijke segregatie en groeiende verschillen in toegang tot betaalbare en schone energie en huisvesting. Dat is in tegenspraak met de duurzame modellen

voor woningbouw en stedelijke ontwikkeling waartoe de 'New Urban Agenda' oproept. Om de principes, neergezet in deze agenda en in Europese afspraken, te integreren in alle aspecten van de technische en stedelijke ontwerp vakgebieden, moet huisvestingsbeleid worden getoetst aan technologisch beleid zoals bijvoorbeeld vervat in het Europese Strategiese Energie Technologie Plan (SET-Plan[1]) 2015-2020.

Co-huisvesting initiatieven blijven experimenteren en ervaring opdoen met competenties, zoals communicatie-vaardigheden, gedragen besluitvorming en inter-sectoraal werken. De bouw sector en technische beroepsorganisaties zijn zich steeds meer bewust van het belang van deze competenties, maar in de opleidingen voor stedebouwkundigen en ingenieurs staat co-huisvesting slechts incidenteel in de curricula. Niet alleen zou de studie naar en met bouwen in eigen beheer de gelegenheid bieden aan toekomstige ingenieurs om dergelijke vaardigheden te oefenen. Er zijn ook fundamentele vragen verbonden aan het bevorderen van bewoners-betrokkenheid; zoals de het delegeren van overheidstaken, en het huidige democratische model. Toekomstige beroepsbeoefenaars moeten zich met dergelijk vragen uiteenzetten, om steeds weer de balans te vinden tussen 'bottom-up' gearticuleerde eisen aan de kwaliteit van de leefomgeving met grootschalige investerngen in nieuwe stedelijke energie, mobiliteit and sociale netwerken.

1 https://ec.europa.eu/energy/en/topics/technology-and-innovation/strategic-energy-technology-plan

Summary

Relevance: self-organisation and energy transition

Following the UN world summits on Climate Change (Paris 2015) and Habitat (Quito 2016), most European cities assume an active role to implement internationally agreed goals related to climate change, translated in the so-called New Urban Agenda. At the same time, the urban housing market is increasingly inaccessible for low- and middle-income households. To overcome problems such as failing housing supply and high energy-bills, groups of residents take initiatives to create and manage housing projects collectively; these initiatives are further indicated as 'co-housing'. Each project forms a specific constellation of organisational, functional and design features, but all are characterised by self-organisation, mixed uses and spaces for sharing activities or devices. The aim of this study is to create deeper understanding of the current rise of co-housing in Europe, and what it could mean in urban policies addressing energy transition and climate change. Studying co-housing is timely because the residents' associations become 'prosumers'; uniting the supply (production) and demand (consumption) of energy, housing and services in their projects. As such, they are increasingly seen as partners in the co-creation and maintenance of urban space.

However, attention for co-housing design and engineering has been limited, which may be due to the relatively small numbers of initiatives and consequently their perceived small impact. Notwithstanding small figures, there are two domains where co-housing can become an important asset for urban development: design and maintenance of (semi-)public space for climate change mitigation, and the transition to a circular metabolism in housing. Based on empirical data, this thesis concludes that co-housing projects present relevant models and approaches for reducing the energy consumption and for integrating renewable energies in the general housing stock. Engineers can learn from co-housing pioneers to advance the targets for energy-transition and further develop sustainable cities.

Framework: Residents, engineers and institutions

The conceptualisation of co-housing in research is moving away from uncritical advocacy and perceiving single projects as 'ideal' models. The thesis contributes to the emerging body of knowledge with a new understanding of co-housing, analysing its 'key-features' with an interdisciplinary framework, in a European context. It adds

a new perspective to existing co-housing research, which is dominated by social sciences, by drawing attention to the physical characteristics of co-housing, produced in architectural, planning and engineering processes (the technosphere). The active residents can be seen as niche innovatiors regarding these processes. How co-housing design and engineering is shaped by the continuous dialectic between (micro-) actors and 'systems', in this case residents' initiatives and housing and energy provision, is the key question of this research. The thesis proposes a contextual reading of the projects and their discourse, which incorporates the institutional and technical contexts. Both are necessary to understand the renewable energy sources and energy engineering found in the projects. The choices made during design and building are not only shaped by the residents' aims and perception of sustainability, but also influenced by technosphere-related institutions, such as the building-components industry, energy or waste networks and providers, and planning regulations. The professional partners for the projects, such as housing associations and engineers, are equally affected by the institutional context, but their position is different from that of residents. They may for example be more anchored in governmental or professional regulations.

To structure this dynamic, the research distinguishes three interrelated aspects:

- ACTORS / involved in the (realisation of) projects: social practices of residents and their professional partners in co-creation.
- CONTEXT / the structural forces surrounding the projects, specifically the macro-institutional regimes. This also includes culturally determined interpretations of sustainability, technology, participation, societal roles, sharing, and so on.
- TECHNOSPHERE / specifically building technology and utilities, focussing on energy-related design and engineering of the co-housing projects.

Methods: empirical basis

The thesis is primarily based on qualitative methods, as it found that reliable quantitative data are as yet unavailable. Looking for effective low-impact energy-solution in co-housing, quantitative data remain however necessary and this thesis elaborates on pitfalls and possibilities for their accumulation.

Empirical material from Dutch case-studies form the core of the research (appendix). Examples were also taken from countries where the re-emergence of co-housing is most visible and articulate: Belgium, France, Germany, the UK and Zwitserland.

Previously informed by professional experience, planning documents were used as a heuristic device, verified through semi-structured interviews and project visits. The empirical material together with the literature survey resulted amongst others in identifying research gaps. From this basis a number of thematic studies was developed, and reported in peer-reviewed publications.

Analyses of national policy documents and programme evaluation reports enabled benchmarking of co-housing related to the general state of the art of energy-efficient housing in the Netherlands. Next to shaping the different generations of resident-led housing of which cases were selected, it also made visible that co-housing initiatives are proportionally over-represented in public programs which stimulate energy-efficient and sustainable building. This phenomenon was also found in other European countries, confirming that co-housing initiatives can be seen as niche innovators in energy-transition. International comparison was further used to identify specific characteristics and design features of the initiatives, and distinguish them from generic housing design shaped by national Building Acts and building conventions.

Findings: niche innovators in urban space and energy

What has become very clear in this research is the impact of the institutional environment on the design of co-housing projects, through requirements for obtaining a building permit, local housing allocation procedures, spatial development priorities and subsidies. The structural institutional forces that shape as well as limit co-housing initiatives in practice have been identified in the national planning regimes; local government and urban development policies play prominent roles. The research found that this influence is reciprocal, for example: In the Dutch case, residents' initiatives had an impact on the housing market, which now has a more customised offer, resulting in what this thesis calls 'hybrid forms' of co-housing (categorised in chapter 7). In other countries, co-housing networks influence the Housing Act (France), housing policies (Belgium), housing typology (Switzerland) or energy standards (Germany). Co-housing has thus become a transformative practice in unexpected ways.

The interviews revealed that planners and real estate developers tend to emphasise the challenges of resident involvement in planning and design, seeing it as too unstable, short-term, short-sighted and small-scale oriented. The case-studies contradict these views: most realised projects are long-lived and continue with sustainable practices.

Socio-legal research demonstrated how strongly institutionally embedded concepts such as private property and the private sphere have been challenged by co-housing. For co-housing design and engineering this affects, for example, the shared spaces

and infrastructure which distinguish co-housing from gated communities and condominiums. A major quality of co-housing is its common or semi-public outdoor spaces, such as clustered parking, playgrounds and gardens. These areas contribute to urban quality for example in heat-stress reduction, facilitating encounters between neighbours and the development of children. Together with the common build volume, they also provide space for the application of environmental technologies, such as water recycling or purification, and solar energy.

Based on the fieldwork, this thesis concludes that there are further innovations possible in co-housing to advance the targets for energy-transition. Due to the technological character of these opportunities, engineers should play a significant role in this exploration and the co-creation of new low-impact residential models.

Conclusions: engineers and residents between grid and project

In the cases studied, the applied environmental technologies are as such not innovative, because residents' associations cannot afford research and development nor take financial risks. However, the way the technologies are decided and maintenaned in resident-led processes, opens a new perspective for the engineering of residential clusters. The self-steering in co-housing enables fine-tuning of the selection and maintenance of building materials, climate devices and comfort requirements, which together can have considerable impact on energy consumption.

Moreover, from an engineering perspective, clustered housing offers additional possibilities to successfully implement sustainable energy systems and local water recycling. The intermediate level of a cluster allows for short cycles (partial autarky) for some flows, such as rainwater. This is relevant for co-housing, but also for urban housing, which calls for grid-related solutions that need to connect to (future) smart grids for decentralised energy production. Through intermediate grids, such as micro-heat networks and solar power circuits, new technical options for buffering, cascading and peak shaving can be applied. In this way, the co-housing cluster mediates between source, grid and user on a scale that is not only overseeable in its spatial and administrative dimensions, but also allows the integration of production and use of urban flows.

A key-issue for both urban planners and utility engineers is to find collaborative design methods to secure efficient or 'low-impact' (energy-)flows from building to grid level. Co-creation also require the institutional empowering of co-housing residents to collectively act as 'client', which is not common in the current European regulatory frameworks and (local) markets. Under such conditions, co-housing offers a rich test-ground for new, combined applications of sustainable technologies.

Under the present institutional conditions, co-housing initiatives need to mobilise considerable social and cultural capital to survive the planning trajectory, during which ambitions for social resilience and inclusiveness often erode. Under such circumstances, the upscaling of resident-led housing can result in urban fragmentation, and a further segregation in access to affordable and low carbon energy sources and housing. This contradicts the sustainable models of housing and urban development called for by the European Union member-states in the New Urban Agenda. In order to integrate the principles underlined in this agenda and European regulatory frameworks into the grain of the planning and engineering professions, it is necessary to integrate housing policies with technological policies such as presented in the European Strategic Energy Technology Plan (SET-Plan[2]) 2015-2020.

Co-housing continues to develop and gain experiences with competences, such as communication skills and the ability to work cross-disciplinarily. The building industry and engineering professions increasingly call for such capabilities, but resident-led urban development have not yet entered the urbanism and engineering curricula. Therefor, opportunities should be provided for future professionals not only to acquire such capabilities but also to address fundamental questions related to resident-involvement and democracy. This will enable future professionals to create a balance between 'bottom-up' articulated needs on the quality of living environments with large-scale investments in new urban energy, mobility and mutual care networks.

2 https://ec.europa.eu/energy/en/topics/technology-and-innovation/strategic-energy-technology-plan

OVERVIEW STRUCTURE OF THESIS AND THE RESEARCH QUESTIONS ADDRESSED IN THE PAPERS			
Chapter title	**Main question/topic addressed**	**Methods applied**	
PART I: SETTING THE SCENE			
1. Introduction: engineers learning from residents? (Introduce topic and approach)	Problem statement, objective, perspective, hypothesis, research questions and structure of thesis General accounting of the research methods	Selection of literature Selection of field-studies, documentation of projects, EU-perspective; interdisciplinary; International comparison	object, relevance & aims, research questions. EU perspective; contribution to and positioning in Urbanism practice & research, introducing Fieldwork: selection of projects,
2. The re-emergence of co-housing in Europe (A critical review of Co-housing research) *Article, Urban Studies 2015-16*	How is co-housing being conceptualised by European researchers in the 21st century? What are the major issues and topics of research, and where are the gaps?	Desk-research, literature review mapping	Review of 50+ relevant sources mostly of the last decade; key-issues, conceptualizations, extracting main thematics and Mapping research gaps
3. Background: from Global to local (outline societal and scientific relevance)	Global challenges, institutional and grass-root response: what motivates the agenda of co-housing and how does it fit into EU strategies for sustainable development	Building on 'people planet prosperity' scheme	Policies (macro) and co-housing (micro) initiatives each address the triple crisis; resulting in a common, agenda of sustainability integrating 3P
4. Dutch context (Establish conditions at geo-technical; social and political level)	What characterizes mainstream-housing in the Netherlands? How have environmental, energy-related policies developed?	desk-research, Analyses of grey literature, policy documents, observation and professional experience	distinguishes periods that mark different 'generations' of policies, growing interaction between government and co-housing/REScoop initiatives

OVERVIEW STRUCTURE OF THESIS AND THE RESEARCH QUESTIONS ADDRESSED IN THE PAPERS			
Chapter title	**Main question/topic addressed**	**Methods applied**	**Main findings**
PART II: EXPLORING			
5. Co-housing Design (Identify key features of design, layout and materialization of co-housing) *Book chapter, Luzern 2018*	comparison of Demand-driven design practices: how does the social agenda of co-housing translate in spatial criteria and design? What is the impact of institutional collaboration?	literature review fieldwork Netherlands project visits NL & CH Interviews plan-analyses comparative studies	Swiss cooperative are more autonomous, Dutch initiatives depend on institutional collaboration which can enhance design process but often limits innovations, especially regarding ecological housing.
6. Planning perspective on co-housing: why and how? (Connect to Planning practice & spatial development strategies) *Article, JURP 2015, bookchapter, Routledge 2016*	Addresses research gap 1: planning perspective. What is the relevance of co-housing for planning? What is a supportive planning system for co-housing?	Fieldwork in the Netherlands Plan-analyses Comparative studies	International driving forces for emergence of (specific forms of) co-housing; missing data; indicative co-housing 'statistics'; criteria for urban characteristics/qualities.
7. From self-build to customised housing (development of co-housing in the Netherlands 1985-2015 and impact on established housing provision and institutional planning) *based on bookchapter Wohnbund 2015; revised article in review*	What are the main characteristics of Dutch co-housing? How do market parties and municipalities respond to CPO-policy? How are the co-housing initiatives influencing institutional planning and housing provision in NL?	Fieldwork in the Netherlands Desk-research, literature review Interviews Applying theoretical framework of niche innovations	Provides classification of the generations of co-housing in NL, in the context of National policies 1980-2010 particularly post-2000 CPO policy. Identifies 'hybrid' cohousing Glossary of Dutch terminology and translations for 'co-housing'
8. Opportunities and risks f for energy transition in self-managed clustered housing (Relating social dynamic to technology concepts and engineering practices) *with A. v.d. Dobbelsteen, Article, in review*	Addresses research gap 1I How can the energy-performance of co-housing be assessed, doing justice to the holistic nature of the initiatives?	Field study / inventory of renewable energy applications and forms of eco-engineering; compared with mainstream energy Analyses of energy-policies in NL and EP calculation models; examples of different periods	Proposes framework to assess specific characteristics of co-housing recommendations and requirements for clustering, orientation, engineering and other measures in the light of self-management / residents' engagement.
9. Co-housing: a double shift in roles? (Explore the links between climate change, gender mainstreaming and co-housing *Book Chapter, Routledge 2017*	Social inclusion and environmental concern are both part of the discourse of co-housing initiatives: do they interact? Is co-housing different from other planning proposals addressing CC or gender?	Fieldwork in the Netherlands & UK Desk-research, literature review Feminist toolkit & critical approaches on climate change Comparing best practices	Emancipation and environmental concern are both part of the discourse of co-housing: do they interact? Feminist theory on technology enables to further understand co-housing potential

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OVERVIEW STRUCTURE OF THESIS AND THE RESEARCH QUESTIONS ADDRESSED IN THE PAPERS			
Chapter title	**Main question/topic addressed**	**Methods applied**	**Main findings**
PART III: INTERPRETING			
10. Professionalizing co-housing (Analyse the dynamic and the perspective for professionalization of co-housing) *with M. Fernandez Arrigoitia, Article in review*	Professionalization as an occupation, a discourse and an ideological construct mapping occupational boundaries and professional discursive repertoires that are constructing the field and its practitioners	Comparative study UK, US, France and NL through interviews and observation	Differences and similarities between process of prof. in resp. countries; Training and synchronization of skills, quality and procedures are both a necessity and a threat to the unique new ways of knowledge development and modes of doing.
11. Conclusions (What has been done, what remains to be done?)	Answers the research questions of chapter 1 & looks back on the research: What were limitations, omissions	Summarizing the theoretical and empirical findings Reflecting on merits and limitations of the research.	Interpreting current European trend; bringing cohesion to an emerging body of knowledge. Recommendations for practice & research agenda Vision of Co-housing future scenarios
A. paper trail Mapping papers & publications	Main lines of the research, peer review	Zotero	Body of knowledge
B. method Accounting for empirical basis	Criteria for selection and documentation of Dutch cases	Prototype factsheet and methodology remarks	Qualitative approach, limitations of quantitative data
C. fieldwork Documenting case-studies	Concise factsheets of 9 projects, time-line and map	Based on planning documents, visits and interviews	Despite different planning regimes continuity in modelling; pioneering in sustainability

1 Introduction

Engineers learning from residents?

§ 1.1 Relevance and objectives

In Europe, inhabitants increasingly take action collectively to create and manage housing projects as living environments (dwellings) [Tummers, 2015b; Wohnbund, 2015; Krokfors, 2012; Lafond, 2012; Locatelli, Desrues & Biry 2011; Vestbro 2010; Kläser 2006; Fromm 2000]. As this study found, the clusters vary in size, between approximately 15-100 units, and identify as *community* at least in the sense of an organisational entity, sometimes in relation to specific ideals, needs or life-style. Households inhabit their own, independent unit, with a large variety of social interactions possible amongst them. Residents-led housing initiatives often rise out of inaccessible housing markets, but in many cases the ambitions reach further: besides affordability, key-elements such as mutual care, shared responsibility and low-impact living, appear on the initiatives' websites and in the project briefings.

In the 20th century, they were generally seen as small-scale experiments of resident-led construction, development and operation of housing. Since the turn of the century, the interest is rising in self-organised housing practices, further indicated as co-housing, as a promising alternative to institutional housing provisions, with self-management, co-creation and sustainability at its core. Case-studies report on 'urban oasis' [Haquebord, 2009] and initiatives are well-represented in sustainable energy subsidy-programs. This raises high expectations, both amongst residents, local administrators and scholars, for co-housing to represent a new model for socially inclusive and sustainable housing [see for example Parasote, 2011; Lietart, 2012; Woude, 2012; Jarvis, Scanlon and Fernandez, 2016]. However, there are presently no overarching or quantitative data available to support or contradict these expectations. Moreover, the realization of co-housing is predominantly a long and difficult trajectory [see for example Scanlon and Fernandez, 2015], and its numbers stabilise (far) below the estimated demand, according to the national co-housing networks in several European countries. The Dutch Ministry recently reduced its target for resident-led development from 30% to 15% of housing production. If co-housing *does* represent a (more) sustainable model, it is important to understand the key factors for success, and look for ways to disseminate and 'mainstream' such qualities. On the other hand,

if the projects do *not* live up to expectations, understanding the bottlenecks will help to improve their effectivity. In order to create such understanding, it is necessary first to establish if co-housing practices fulfil co-housing ambitions.

The objective of this thesis is to evaluate the (re-)emergence of co-housing and its expected positive qualities in the European context, asking: **What experiences of co-housing have a wider relevance for sustainable housing?** The study is based on case-studies in the Dutch context, and international comparison with France, Germany, the UK, Flanders and Switzerland (figure 1.3). It aims to build the foundations for a deeper understanding of co-housing, critically looking at the promises it can hold. This is not only motivated by increase of new forms of housing that need to be accommodated. Long-term wide-ranging international agreements regarding social and environmental critical paths, such as energy transition and climate change, underline the urgency to incorporate options for participative low-impact living in urban development, and into professional expertise. A more sophisticated understanding of co-housing is relevant for three major reasons:

1. To enable adequate responses from housing authorities to the current increase in demand.
2. To optimise the qualities co-housing appears to offer, especially for sustainable urban development.
3. To harvest wider benefits for 'low impact' planning and engineering, such as reduced energy consumption and CO2 emissions of housing.

As early as 1994 a benchmarking study of Duncan and Rowe recommended more research on self-provided housing, especially concerning design & planning. Twenty years later, these issues have hardly been addressed for the European context, other than in building-manuals suitable for self-*builder*s. This thesis contributes to the existing body of knowledge by drawing attention to the physical characteristics, produced in architectural, planning and engineering processes. It searches for the environmental, rather than the social benefits of co-housing, by addressing the underdeveloped area of the *techno sphere* in research on collaborative housing. The techno sphere is defined as imprint from cultural and technological processes [Veteikis & Jankauskaite, 2008]. It theorises the *hardware* that connects co-housing to the urban metabolism as dependent on dominant perceptions of engineering [van Bueren et al, 2012]. Incorporating the techno sphere is necessary to understand the decisions regarding renewable energy sources and energy efficiency that have to be addressed during the design and building process [Redman and Miller, 2015]. The choices made during design and building are shaped by techno sphere-related institutions, such as building-components industry, energy or waste networks and planning regulations.

Besides the techno sphere (c.q. building-method and engineering), housing and environmental policies also need to be considered, because they both influence the effectiveness of the initiative to achieve its intentions in equal manner. Co-housing creates a concrete, material response to exogenous, structural forces, with an impact tangible at local scale (the living environments) that in its turn produces changes in society; especially in the production of housing and the residential energy-system.

§ 1.2 Problem statement and hypotheses

In most European countries, with the exception of Germany [Krämer and Kuhn, 2009*]*, local authorities and planning departments still perceive co-housing projects as incidents or minority interest. As a consequence there is no continuity of decision-making or dynamic throughout the scales[3] and the institutional response to resident-led housing initiatives is inconsistent, even within one housing and planning system. For example, national regulations for housing distribution may be applied more or less strictly in different municipalities. For legal and financial matters the single household unit and individual home-ownership prevail as cultural institutions. Housing statistics apply just two categories of housing providers: the public (state) and the private (market) which means there is no reliable data on co-housing development. The paradigms (on which regulations are based, and officials, technicians/engineers operate, such as the definition of 'household' or 'sustainability', are different from co-housing values, which cause frictions during the realisation process [Jarvis 2015, Wohnbund, 2015]. Some frictions are specific for an a-typical or local situation, for example the availability of sites. Others occur repeatedly and depend on larger, national institutions such as the Building Acts regulating zoning plan categories, or energy-supply companies operating large plants and networks subject to licencing conditions.

After a general exploration of co-housing, this study focuses on challenges and opportunities related to energy demand and supply within the projects, in the wider context of transition to a non-fossil energy-system**.** Energy demand and engineering is one of the most visible and measurable aspects of housing, and has financial, social and technical consequences for residents. From an engineering perspective, and

3 The planning conditions are scale-dependent, for example: decisions regarding water management are taken at regional scale-levels while those on land-use and zoning plans depend on municipalities.

informed by professional experience[4], self-managed, clustered housing offers specific possibilities to successfully implement sustainable energy systems and local water recycling. On this basis, a **first hypothesis** is formulated:

The specific possibilities co-housing offers to optimise its energy system are currently underutilised, whereas these could contribute to achieve climate change targets, advance energy transition and implement sustainable urban policies.

For example, Tillie et al. [2014] point at the possibility to re-use energy flows on an intermediate scale that applies to most co-housing projects:

(for cascading) ***It is much more difficult to purify waste water on an individual building basis than a collective to reclaim biogas.*** *Some technologies are feasible at the individual scale, e.g. PV panels and solar collectors,* ***other forms of generation are potentially more feasible at the neighbourhood level – e.g. ground source heat pumps and wind.***

The introduction of new vast infrastructures for this heat exchange in cities may be uneconomical when compared to traditional systems. This is, however, dependent on the way things are solved and exactly the reason why low-temperature systems should be tackled at neighbourhood level (typically with a radius of not more than 300 m).

[Tillie et al., 2014:180]

The thesis is further based on the general observation that in housing production, the realisation *process* is decisive for the qualities of the final result, cq *product*. Therefore, it can be expected that there is a difference between the ambitions and intentions of co-housing initiatives, and their final built form. For this reason, the institutional context is essential to understand co-housing and the ways in which it is, or is not, different from mainstream housing. From this observation, a **second hypothesis** is formulated:

The pan-European increase in residents' involvement to create housing makes it necessary for engineering and planning professions to change and define 'new' professional roles to facilitate co-creation of low-impact housing clusters.

These hypotheses were tested in a series of thematic studies, which will be further introduced below (see also appendix A).

4 Approximately 20 years as consulting engineer for sustainable building in the Netherlands and abroad

§ 1.3 Research questions

Aiming to create an understanding of possible environmental benefits and challenges of co-housing, by investigating the interaction between (co-housing) actors and the (planning and engineering) regime, the central question asked in this research is:

'How does co-housing contribute to the transition to a non-fossil energy system in housing and how can this contribution be improved?'

Preliminary field observations combined with literature survey gave direction to the following sub-questions:

1 What is contemporary co-housing in Europe?
   - a What are major characteristics in practice?
   - b How are they different from mainstream housing?
   - c How is co-housing perceived in research?

2 How can 'low-impact living', specifically the energy-performance, be assessed, taking into account the specific characteristics of co-housing?
   - a Which specific (innovative) design and engineering solutions for low-impact living, in particular related to energy, does co-housing present?
   - b What are the methodological challenges for energy assessment of co-housing?
   - c What are specific opportunities and risks of co- housing to achieve a 'low-impact' energy performance?

3 What are the institutional challenges of co-housing?
   - a Which institutional elements hinder or enhance co-housing?
   - b What are specific requirements and opportunities for engineering (concepts) in co-housing?
   - c What is the impact of co-housing on professions and professionals?

The conclusions summarise the findings of the thematic studies, to answer these questions.

§ 1.4 Positioning this thesis

§ 1.4.1 Perspectives

The thematic studies look at co-housing from different angles, related to different disciplines concerned with housing (figure 1.1). The architectural perspective looks at the layout and materialisation of the built volume, at project-level. Urbanism places the initiatives in the urban environment, looks at the larger scale appearances and planning instruments. Housing studies addresses the institutional context, including forms of tenure and finance, and collaboration with governmental bodies and housing associations. Urban studies is concerned with the socio-economic profile and citizenship aspects in the political context. In all of these questions, the hardware or techno sphere plays a role: for housing and urban studies at the background as real estate and networks, while urbanism and architecture includes engineering directly. The techno sphere of architecture lies mostly in building technology, the techno sphere of urbanism in overland and subsoil infrastructure for transport, water energy and waste.

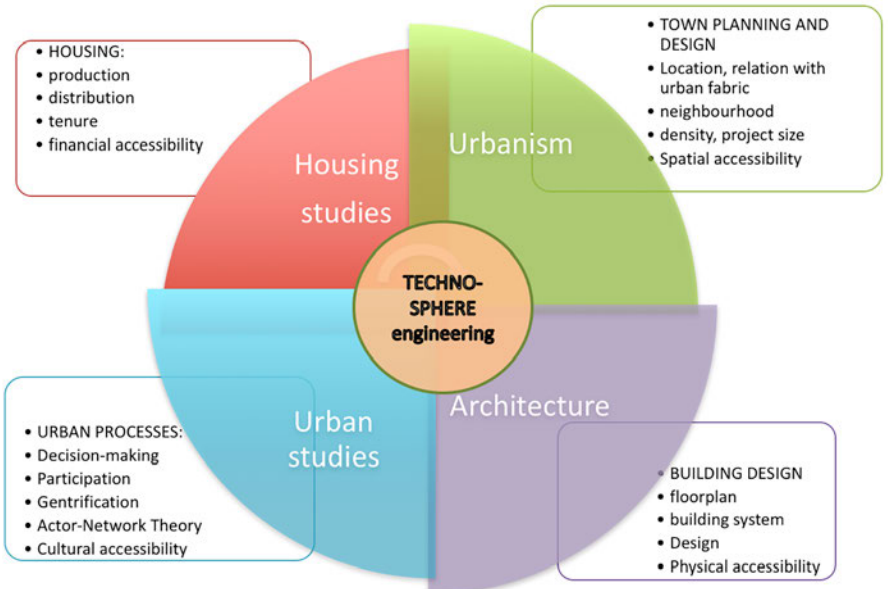

FIGURE 1.1 Positioning this research in relation to housing-related disciplines: technosphere, the circle in the centre, appears in all of them but the type of questions raised varies.

§ 1.4.2 Techno sphere and engineering

Many co-housing initiatives aim to be energy-efficient and reduce toxic emissions, as part of their holistic view on 'low-impact living'. Whereas often budget is the decisive argument, to select material and technical options, these are also constrained by state of the art technology. My background in sustainable engineering was useful to identify the alternative routes that could have been taken to reach set goals of 'low-impact' sustainable or energy-neutral building. The concepts of engineering implicitly steer the decisions. Building technology research has evaluated over the last decades from being concerned exclusively with hardware, to take into account social practice and civil initiative. Figure 1.2 illustrates the convergence of these strands of research: hardware, social practice and civil initiative. The converging process can be summarised as follows:

Traditionally, technological research concerned the 'hardware of housing', investigating the structural and material components of architecture. Increasing comfort standards introduced sophisticated utilities into the homes [Subrémon, 2011; Shove, 2003]. The need for environmental awareness has brought the interaction between housing construction and the engineering of services such as heating and ventilation into focus. Finding that calculation models are not reliable indicators for the effects of technical solutions, researchers increasingly look at the interface between users and technology. The demand side of energy-cycles is further determined by the complex social practices of households [Shove, 2003]. Addressing the impact of behaviour on energy consumption has amongst others identified the rebound effect [see for example Gram-Hanssen, 2014, Stevenson 2013]. Yet in practice, technical and social practice approaches are largely separated and the role of technology and the framing of engineering in housing production is overlooked [Gram-Hanssen, 2014]. Sustainable energy studies are still concerned primarily with supply and technology, for example designing and monitoring the '*Passivhaus*'[5] typology. In practice, the *Passivhaus* requires active 'climate control' of its inhabitants, who have to know when to open windows and close sun-blinds, as well as anticipate the time for warming up or cooling down of the system. Alternatively, electronic controls (known as smart technology) take over this role, but they need to be programmed to the daily rhythm of the residents.

Most recently, civil action for energy transition, such as energy co-operations and the Transition Town movement, has drawn interest of researchers [e.g. Avelino et al. 2015;

5 the Passive House Standard was Europe-wide agreed at max 15 kWh/m 2 average energy demand throughout the year

Gupta et al. 2014; Schwencke 2012, Seyfang 2008]. A number of authors argue in favour of 'community-based action'. For example: Karvonen [2013: 571] argues that community-based domestic retrofit programmes can achieve more than approaching individual home-owners. He particularly stresses the importance of long-term involvement. housing, is a deep social and financial investment to which ong-term involvement is intrinsic. Co-housing initiatives can thus be expected to generate longer and deeper commitment compared to energy co-ops or other community actions.

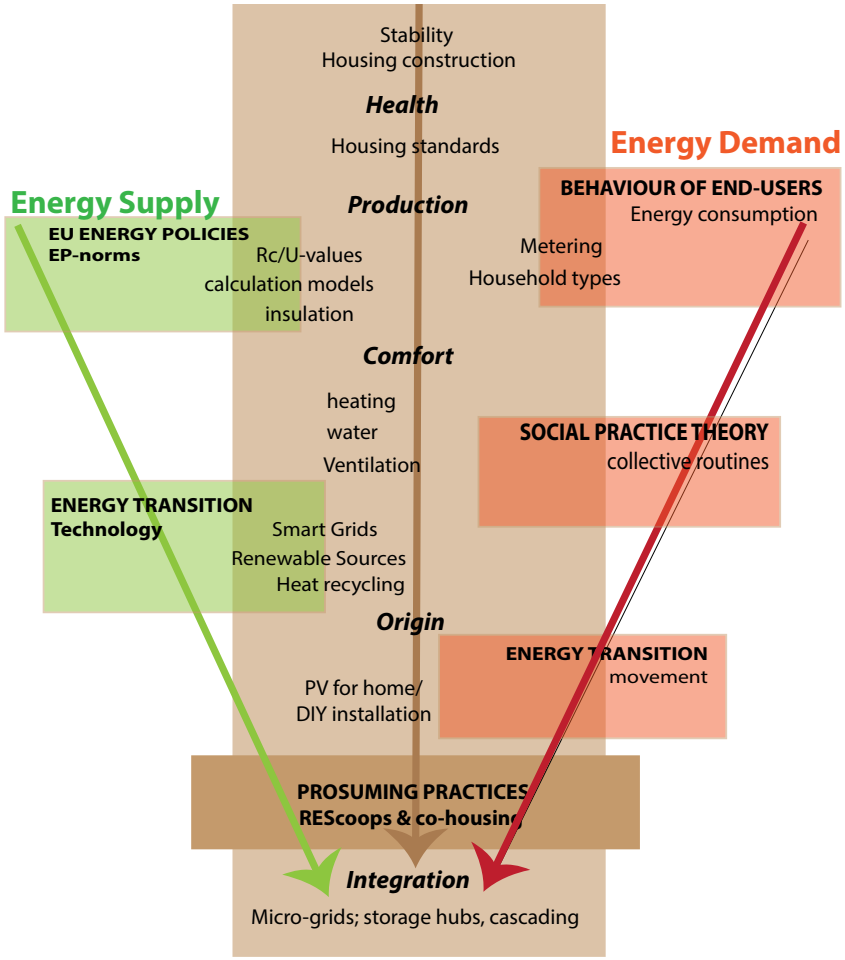

FIGURE 1.2 positioning co-housing research in the overall research concerning energy-supply in housing

Studying co-housing is timely because it is on the crossing of these developments. The residents' associations unite the demand and supply (of energy, housing and services) in a new status of 'prosumers'. As such, they present relevant models or visions for reducing the energy consumption of the general housing stock. However, although some projects monitor the energy-consumption, there is no reliable evidence to substantiate the extent of 'low-impact' models to measure, calculate and monitor energy demand and supply are based on individual households and housing units, and seldom take into account the dynamics of shared spaces and common rooms. The focus of this thesis lies on the friction between institutional environment and co-housing practice in assessing and optimizing the energy performance.

An optimal energy-performance is defined here as: the energy-related design and engineering of a housing cluster that results in reducing demand, using renewable sources, minimize exergy (system losses) and apply local energy production.

§ 1.5 Methods and case-studies

To answer the research questions, this study looked both at practice and at theory of co-housing. An initial literature survey was performed in 2012-2014. The aim was to identify the key-concepts of collaborative housing in practice and in theory, and the research gaps leading to the thematic studies. The accounts for the selection of literature and the way it is interpreted and discussed can be found in chapter 3.

The **empirical material** documents the fieldwork, an in-depth study into nine Dutch projects (appendix C). To ensure that the cases had a comparable position in relation to urban infrastructure (in the widest sense), the projects selected for the Dutch study are located in similar, sub-urban areas and high centralities or remote areas were avoided. Regional spreading allows to identify eventual differences in local governance. Chapter 4 provides more background to the location of the Dutch cases.

The basic data concerning the projects are collected in a uniform factsheet, which contains nine sections (see appendix B). Data was gathered through project-visits and interviews, from technical and policy-documents. Planning documents were used as a heuristic device, to investigate the trajectory of planning and applying for building licence of the initiatives. Comparing the initial concepts with the final, built, form, brought to light how these are filtered at each planning step and what was the role of the institutional partners.

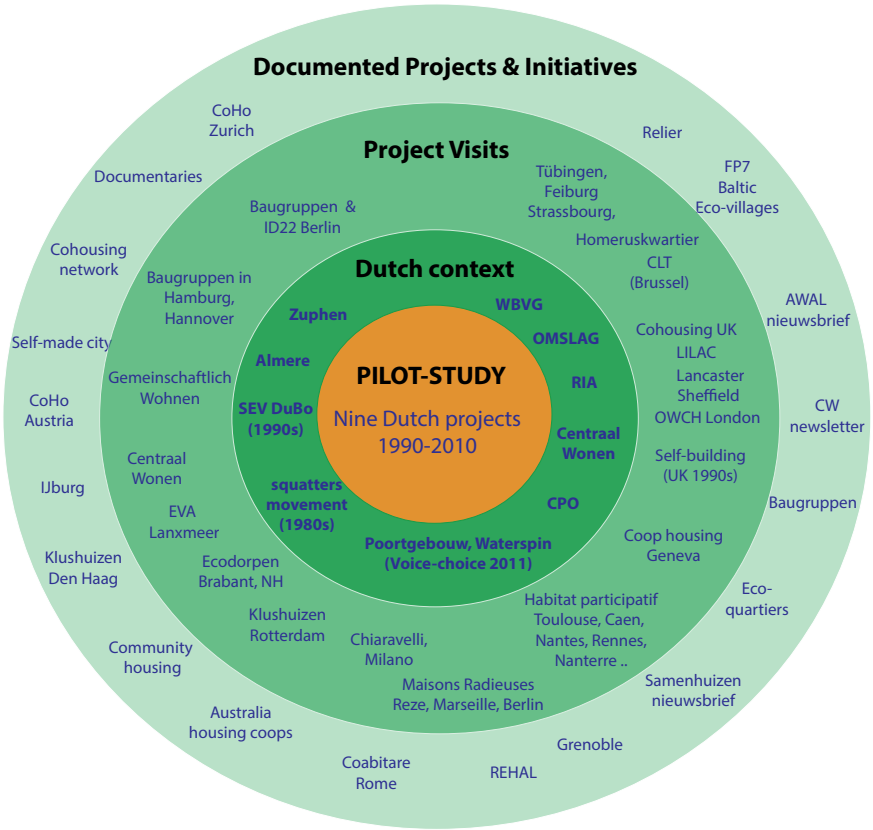

FIGURE 1.3 Empirical basis: in-depth study of nine Dutch co-housing projects, with references in other Europe countries. (see also table 1.1)

In addition to the Dutch cases, around thirty co-housing projects in France, Germany Belgium and the UK were documented, with incidental information from other EU member states and Switzerland (figure 1.3). Making use of data from different European countries presents challenges of aggregating and comparing information. For this reason, the Dutch case-studies form the core of the research, and international comparison is used as reference for specific aspects, explored in the thematic studies. One example is to understand the driving forces behind the (re-) emergence of co-housing initiatives as explained in chapter 6. Each chapter utilises a different aspect of the projects' documentation, and encountered specific methodological difficulties, therefore each chapter further accounts for the methods applied in that particular thematic study.

OVERVIEW OF RESEARCH MATERIAL *(2016)*		
Interviews (audio-recorded, partial transcriptions)	Semi-structured; guided by project observations and planning documents.	Co-housing initiators; professionals involved in coho projects, employees of municipal planning departments
Project documents	Archived from building licence application. Those on paper (pre-digital age) have been scanned and returned.	Plans, sections, detailing and briefings, minutes of meetings concerning planning
Project visits	Netherlands	9 projects (repeated visits) as individual PhD researcher; in addition ±12 as evaluator or part of group/ excursion (partly before 2012)
	Other European countries	±20 single visits, as part of research team/group
Workshops/seminars organized by co-housing networks	France (RNHP), UK (ESCR-program), Germany (Xperiment Days, Gemeinschaftlich Wohnen, Bugerbureaux), Spain (Rulescoop), Urbamonde	8 workshops, including policy debates and sessions on technical or energy-related subjects
Evaluation reports	Senter-Novem and SEV pilot projects and professional archive (Tussen Ruimte)	First and second round energy-efficiency demonstration projects, adjacent programmes such as IFD
Public information	Project and network websites (See references and thematic studies for details)	Dutch Ministries responsible for Environment and energy; CBS, EIB and SCP for statistics and trend-studies
Policy documents	TUD library, government online archive and professional archive (Tussen Ruimte	Development of housing, environmental and energy policies, notably new Building Act and EPC
Academic literature	Processed and annotated in Zotero	See references, especially chapter 2 and thematic studies

TABLE 1.1 Types of research material accumulated 2012- 2015

The original method was aiming to analyse the Dutch situation through **quantitative data**, in order to draw up criteria for measuring the success or impact and enable comparison of projects in different contexts. However, in the context of a PhD research it was not possible to collect reliable figures, for three major reasons: first, the plurality of the co-housing concept: this is further specified in chapter 3 and illustrated by the table in chapter 6. Second, the Dutch Central Bureau for Statistics (CBS) registers co-housing initiatives since 2009 in a new the category 'private commissioner' (C-PO[6])

6 see glossary in chapter 7

TOC

but only for (individual) home-owners. Rental units are formally commissioned by institutional housing associations (corporations) and thus remain statistically invisible as self-organised. Third, anonymised energy-related data is only available at postcode-level, which does not correspond to the project cluster. Chapter 8 elaborates further on the challenges on assessing energy performance of co-housing.

As consequence, the research is primarily based on qualitative data.

For the general state of the art of **energy-efficient housing in the Netherlands**, national policy documents and programme evaluation reports were analysed. The cases of Dutch co-housing projects were selected amongst newly constructed clusters from different periods, further specified in chapter 4. The period of construction is relevant for the interpretation of its central characteristics, because the spatial logic of the co-housing projects needs to be placed in the dominant housing patterns of their time. Also, earlier innovations may not be recognised as such in the contemporary time-frame. For example, the architectural models for clustered housing with residents' involvement of the 1960s, made use of prefab concrete as a then advanced technology, which is now obsolete because of its bad energy performance. Contemporary initiatives apply modernised forms of straw-bale construction that are tradition-based and labour-intensive, but also the use of enable innovative engineering solutions such as low-temperature heating.

Finally, co-housing networks organise seminars and workshops that are documented in handbooks and proceedings, and projects have published their experiences. Through participatory observation, using as well as providing input for information online or as downloadable content, repetitive issues could be identified and ranked. Albeit subjective sources, these provide valuable insights in the rationale behind energy-related decisions and the bottlenecks encountered.

The empirical material together with the literature survey formed the basis for a number of thematic studies, resulting in peer-reviewed publications (Appendix A). These are specified below. Figure 1.4 summarises the development of the research:

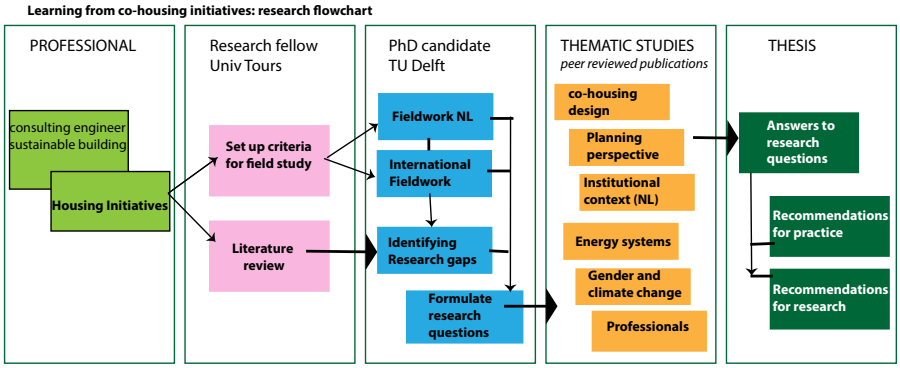

FIGURE 1.4 flow-chart of the research

§ 1.6 Structure of the thesis

The text is structured in three parts (figure 1.5; Table 1):

I Framing section: setting the scene

Chapter 1: this introduction describes the relevance and aims of this study.

Chapter 2: literature review of approximately 50 publications on co-housing of the last 15 years (published as "The Re-emergence of Self-managed Co-housing in Europe. A Critical Review of Co-housing Research." *Urban Studies* 53(10): 2022-2040. DOI 10.1177/00420980155 online 2015, full publication 2016).

Chapter 3: placing the agenda of self-provided housing in the context of global challenges and UN/EU policies. Chapter 2 also updates the literature review as presented in chapter 2.

Chapter 4: introduces the Dutch context outlining three decades of housing and energy policies that set the scene for the rise of co-housing initiatives. It proposes four periods of the institutional environment and–regime in which the case-studies were selected.

II Explorative section: thematic studies

This section holds the peer-reviewed papers and peer-reviewed book-chapters, which each investigate co-housing from specific angles, related to the research questions: chapter 5 is related to question 1: 'what is co-housing?' Chapter 6 and 7 are the main basis to answer research question 3, the institutional challenges of co-housing. Chapter 8 and 9 form the basis to answer research question 2, related to the energy-system of co-housing. All studies have been presented and reviewed as conference papers, listed in appendix A.

Chapter 5: Co-housing design, new qualities through new coalitions? Comparing Dutch and Swiss cases the chapter looks at the design of typical co-housing projects, and how co-creation contributes to customized design.

Written with a grant from the Lucerne University of Applied Science and Arts, the chapter is accepted by the editors as contribution to: Sturm, U. and Lienhardt, M. (eds) «*Kooperation Bau und Raum, den Mehrwert interdisziplinärer Arbeit*» to be published beginning of 2018 and is currently under blind peer review.

Chapter 6: Understanding Co-Housing from A Planning Perspective: Why and How? widens this into a more systematic planning perspective, identifying key-characteristics that are important for the relation between co-housing initiatives and the urban environment, notably the neighbourhood and sustainability policies.

This article was published as a contribution to the co-housing issue of the Journal of Urban Research and Practice 8(1): 2015: 64–78. http://dx.doi.org/10.1080/17535069.2015.1011427

Chapter 7: A rupture with top-down planning? zooms in on co-housing in the Netherlands, looking at how co-housing itself developed over time, from idealist to pragmatic practices. It describes how co-housing has influenced urban development strategies and the housing market, concluding that co-housing can be seen as transformative practices for planning and housing provision.

Chapter 7 was first commissioned by the german Wohnbund, and published as: "Self-managed co-housing in the Netherlands: From 'alternative community' to 'I (build my) -house'" pp. 44–53 in: Wohnbund (ed.) (2015), *EUROPE: Cooperative Housing/ EUROPA: Gemeinsam Wohnen*, Berlin: Jovis Verlag GmbH. This manuscript contains the updated and extended version which has been reviewed at the ENHR annual conference 2015 and submitted in February 2017 to the Journal of Housing and the Built Environment.

Chapter 8: Energy system: assessing performance to optimise the engineering for co-housing analyses how the data and calculation models available do not allow adequate quantitative assessment of the energy-performance or environmental impact. The paper proposes an approach to remedy this substantial lack of evidence, based on specific co-housing design features.

Chapter 8 was presented to the DEMAND annual conference 2016, and published in the proceedings. This manuscript contains a revised version, co-authored by Prof. A. van den Dobbelsteen (2016) Integrated energy performance assessment: the collaborative housing model. The paper is currently in review at 'Environment and Planning B'

Chapter 9: A double shift of roles? addresses Climate Change and Gender Equality

Co-housing implies a double shift in roles: first, energy consumers also becoming producers, second, breaking with household stereotypes and gender roles in sharing and exchanging domestic tasks. in a wider context of climate change mitigation, both new roles need to be taken into account to overcome technocratic approaches and design effective mitigation strategies.

Chapter 9 was published as contribiution to: S. Buckingham & V. le Masson (eds): *Understanding Climate Change through Gender Relations* Routledge, April 2017. ISBN: 9781138957671 / 9781315661605

III Interpreting section

Chapter 10: Professionalization and institutionalization is based on a comparative study into co-housing professional infrastructure in Netherlands, France, UK and USA performed together with sociologist M. Fernandez. Co-housing generates new experts and types of expertise, which raise questions of reliability and conflicting interests. The paper looks at new roles for professionals and the dilemma's they face in a wider sense. The conclusions suggest that a quality validation system is due, which would need to involve co-housing initiatives and residents, acknowledging their expertise but shielding their specific interests.

Chapter 10 as thematic study was presented to ENHR annual conference 2016 as *Professionalising co-housing: Passionate new expertise emerging in France, UK, US and the Netherlands*. [see proceedings]. This manuscript contains the extended paper with new conclusions, revised by myself in June 2017. A joined version was submitted and accepted for review by European Planning Studies in August.

Chapter 11: conclusions which resume the research questions to look at the possible implications of co-housing as (potential) agents of change in the domains of professionalism, energy and engineering. They also reflect on the contribution of this thesis to the emerging co-housing research and body of knowledge. This section ends with an outlook to the possible development of European co-housing in the near future.

Figure 1.5 visualises the structure of the thesis and Table 1 (summary) provides an overview of the research questions addressed, objectives and methods for each chapter.

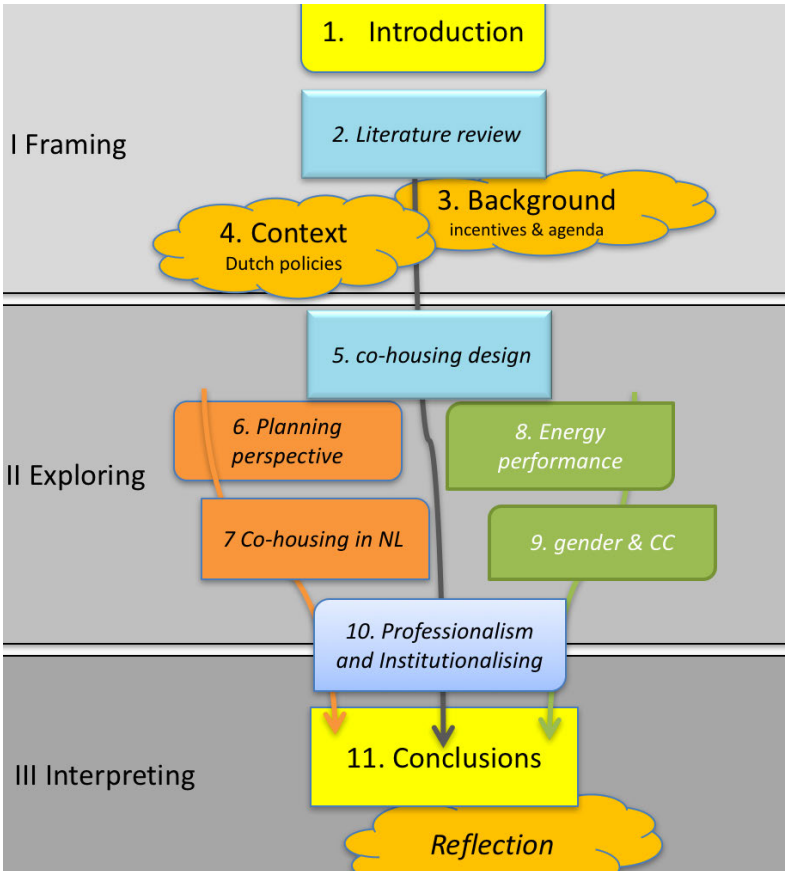

FIGURE 1.5 structure of the thesis Legend. Blue is related to research question 1: what is co-housing? Green to Question 2: sustainable energy; Red to Question 3: institutional challenges (context in orange) yellow is synthesis chapters 10 and 11

References Introduction

Bresson S and Tummers L (2014) L'habitat participatif autogéré en Europe: vers des politiques alternatives de production de logements? *Metropoles* Politiques alternatives de développement urbain(15). Available from: http://metropoles.revues.org/4622 (accessed 23 January 2015).

Bresson, Sabrina, and Sylvette Denefle. "Diversity of Self-Managed Cohousing Initiatives in France." *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 5–16.

Bueren EM van, Bohemen H van, Itard L, et al. (eds) (2012) *Sustainable Urban Environments: An Ecosystem Approach*. Dordrecht Heidelberg London New York: Springer.

Droste, Christiane. "German Co-Housing: An Opportunity for Municipalities to Foster Socially Inclusive Urban Development?" *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 79–92.

Duncan SS and Rowe A (1993) Self-provided Housing: The First World's Hidden Housing Arm. *Urban Studies* 30(8): 1331–1354.

Fedrowitz M and Gailing L (2003) *Zusammen wohnen. Gemeinschaftliche Wohnprojekte als Strategie sozialer und ökologischer Stadtentwicklung*. Blaue Reihe; Dortmunder Beiträge zur Raumplanung, Dortmund: IRPUD.

Fromm D (2000) Introduction to The Cohousing Issue. *Journal of Architectural and Planning Research* 17(2): 91–93.

Hacquebord, Jeanet. "Duurzame stadsoases, functioneel, financieel, ecologisch en sociaal in balans." Woninnovatiereeks. Arko Uitgeverij BV: ZI Onderzoek, of 2006 2009.

Gram-Hanssen, Kirsten. (2014): "New Needs for Better Understanding of Household's Energy Consumption – Behaviour, Lifestyle or Practices?" *Architectural Engineering and Design Management* 10, no. 1–2 (April), 91–107. doi:10.1080/17452007.2013.837251.

Gupta, Rajat, Laura Barnfield, and Tara Hipwood. "Impacts of Community-Led Energy Retrofitting of Owner-Occupied Dwellings." *Building Research & Information* 42, no. 4 (July 4, 2014): 446–61. doi:10.1080/09613218.2014.894742.

Jarvis, helen. "Towards a Deeper Understanding of the Social Architecture of Co-Housing: Evidence from the UK, USA and Australia." *Journal of Urban Research and Practice* 8, no. 1 (March 2015).

Jarvis, helen, Kath Scanlon, and Melissa Fernández Arrigoitia. "Cohousing: Shared Futures." Newcastle upon Tyne: Newcastle University, 2016.

Kläser, Simone. "Selbstorganisiertes Wohnen." *Arch plus*, no. 176–177 (2006): 90–96.

Krämer, Stefan, and Gerd Kuhn. *Städte und Baugemeinschaften*. Stuttgart + Zürich: Karl Krämer Verlag, 2009. wuestenrot-stiftung.de.

Krokfors K (ed.) (2012) Co-Housing in the Making. *Built Environment* 38(3): 309–314.

Lafond M (ed.) (2012) *CoHousing Cultures: Handbuch für selbstorganisiertes, gemeinschaftliches und nachhaltiges Wohnen / Handbook for self-organized, community-oriented and sustainable housing*. Berlin: Jovis Verlag.

Locatelli D, Desrues F and Biry J-M (eds) (2011) *Guide Pratique de l'Auto-promotion*. Strasbourg: Association Eco-Quartier Strasbourg et CAUE Bas-Rhin.

Redman, Charles L., and Thaddeus R. Miller (2015). "The Technosphere and Earth Stewardship." In *Earth Stewardship*, edited by Ricardo Rozzi, F. Stuart Chapin III, J. Baird Callicott, S.T.A. Pickett, Mary E. Power, Juan J. Armesto, and Roy H. May, 2:269–79. Cham: Springer International Publishing

Scanlon, Kath, and Melissa Fernández Arrigoitia. "Development of New Cohousing: Lessons from a London Scheme for the over-50s." *Journal of Urban Research and Practice* 8, no. 1 (March 2015).

Seyfang, Gill (2008). "Grassroots Innovations in Low-Carbon Housing." ESRC. ISSN 0967-8875. The Centre for Social and Economic Research on the Global Environment (CSERGE),.

Seyfang G and Haxeltine A (2012) Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions. *Environment and Planning C: Government and Policy* 30: 381–400.

Schwenke, Anne Marieke (2012) "Energieke BottomUp in Lage Landen. De Energietransitie van Onderaf." Leiden: AS I-Search, http://www.asisearch.nl/energieke-bottomup-in-lage-landen.

Shove, Elizabeth (2003). *Comfort, Cleanliness and Convenience. The Social Organization of Normality*. New Technologies/New Cultures Series, ISSN: J472-2S95. oxford/New York: Berg

Stevenson, Fionn. "Reducing Energy Demand through Retrofitting Buildings." *Building Research & Information* 41, no. 5 (October 2013): 605–8. doi:10.1080/09613218.2013.799730.

Subrémon, Hélène. "Etat de La Littérature Anthropologique Sur La Consommation D'énergie Domestique – En Particulier de Chauffage." Paris: MEEDAT – DGALN/PUCA, November 2011. http://www.furet.com/anthropologie-des-usages-de-l-energie-dans-l-habitat-un-etat-des-lieux-coll-puca-recherche-n-20-1854427.html.

Tillie, Nico, Andy van den Dobbelsteen, and Sebastiaan Carney. "Planning for the Transition to a Low-Carbon City: A New Approach." In *Low Carbon Cities: Transforming Urban Systems*, edited by S. Lehman, 173–90. London: Earthscan, 2014.

Tummers L (2016) The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research. *Urban Studies* 53(10): 2023–2040.

Tummers, Lidewij, ed. (2015A) "Taking Apart Co-Housing. Towards a Longterm Perspective for Collaborative Self-Managed Housing in Europe (Introduction to the Special Issue)." *Urban Research and Practice,* 8, no. 1 (March 2015). doi.org/10.1080/17535069.2015.1011421.

Tummers, Lidewij. (2015B) "Understanding Co-Housing From A Planning Perspective: Why And How?" *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 64–78. http://dx.doi.org/10.1080/17535069.2015.1011427.

Veteikis, Darijus, and Margarita Jankauskaite. "Territorial Regionalization of Landscape Technosphere in Lithuania." *Journal of Environmental Engineering and Landscape Management* 17, no. 1 (October 14, 2010): 60–67.

Vestbro D (ed.) (2010) *Living together- co-housing ideas and realities around the world*. Stockholm: Royal Institute of Technology division of urban studies in collaboration with Kollektivhus NU.

Wohnbund e.V. (ed.) (2015) *Europa Gemeinsam wohnen | Europe Co-operative Housing*. Berlin: Jovis.

2 A critical review of co-housing research

The re-emergence of self-managed co-housing in Europe

Summary and update

This chapter comprises a review of more than fifty written sources concerning co-housing, the first since the overview of co-housing research made by Dick Vestbro, a Swedish co-housing researcher and activist, in 2000. The majority of studies was published in the last decade, which underlines the increasing interest in cohousing.

The article has a European perspective, sources from the USA and Australia have only been included when they contain European references. The research does not address other continents because the socio-economic and planning context is very different from that in Europe which leads to different features for clustered resident-led housing, such as housing cooperatives, condominiums or gated communities, and false comparisons.

One section of the paper is dedicated to conceptualizations of co-housing. In general, there is a lack of critical assessment and of characterizing the object of research. This can lead to conclusions based on projects with fundamental differences, such as bottom up or top down governance, in other words comparing apples with oranges. The chapter therefor proposes a new categorization grouping, following new issues that emerge from the post-2000 studies, and the more common classifications following disciplinary boundaries (such as: legal, social, technical).

The literature study resulted in bringing new order into an emerging interdisciplinary and fragmented body of knowledge. It also **identified two research gaps**:

Institutional planning context. The literature review revealed that in practice the achievement of the common goals of co-housing initiatives, such as sustainability, diversity and equality, is often compromised due to planning conventions and institutional partners. See paper 4.

Assessment of sustainability and energy performance. There is some monitoring of individual projects available, but no systematic data harvesting. The lack of critical assessment is partly due to the absence of a useful method to understand the specific features of co-housing and how they influence its energy-household and ecological footprint. Very few researchers address this topic and the fact that projects were designed under different EP and sustainability regimes makes comparison more complex. Paper 8 analyses this topic further.

A number of co-housing publications (especially from Scandinavia) are related to gender studies. Whether the claims for gender-equality are achieved in the projects is a subject for sociologists, however it became clear that gender theory (especially related to technology and energy-transition) enhances the understanding of co-housing. This is further explored in chapter 9.

The version included in the following pages is the peer reviewed paper as published online in May 2015. From May 2016, the review is available with full reference[7].

In the two years between this first publication and the completion of this dissertation, the amount of studies and (conference) papers on co-housing continued to grow. These papers are further discussed in the thematic chapters while a general update is provided in §3.6.

§ 2.1 Introduction: the re-emergence of co-housing in the 21st century.

Self-managed collective housing is growing in Europe, and so too is the body of research on the subject. Co-housing initiatives constitute a sometimes pragmatic, at other times idealist response to the challenges of living in contemporary Europe. In its realization, contemporary co-housing is wider than the community-oriented model designed by the cohousing movement in the 1970s. There are many similarities in the discourses of co-housing networks internationally, although the emphasis varies. Experiences recorded on websites and in publications indicate that being involved in a co-housing initiative is a major and time-consuming effort. The perseverance of individual project members implies strong motivations. Most research highlights the positive social and environmental qualities of co-housing, based on empirical

7 Tummers, L (2016) The Re-emergence of Self-managed Co-housing in Europe A Critical Review of Co-housing Research. Urban Studies vol 53(10): 2023-40. DOI 10.1177/0042098015586696

studies often through participative research. Consequently, co-housing raises many expectations for creating vivid social networks and healthy environments. Despite small numbers, co-housing is seen as a model for wider housing provision that aims for sustainable and inclusive development (krokfors 202, Maury 2009).

Collaborative housing initiatives fit in the societal trends of decentralization, increased self-reliability and demand for participation and custom-made solutions. The incentive and planning context varies from country to country, although it tends always to challenge housing policy and planning cultures in significant ways. In twenty-first century Europe, the individual owner-occupied suburban household unit is embedded deeply into planning culture and practice, including, for example, standardized plots and building materials; density and transport policies; and legal and financial instruments that strictly separate private (individual) and public (institutional) concerns. Confronted with cooperative 'grass-root' housing initiatives, planning authorities need to review the urban development and planning processes, reposition stakeholders and formulate new criteria for land-use [Droste and Knorr-Siedow, 2012; Kuhn and Krämer, 2009; Fedrowitz and Galling, 2003]. The emergence of co-housing initiatives has also encouraged new professional consultancies that facilitate collaborative planning, cooperative housing property and finance. Co-housing in the European context is 'increasingly helped along in a top-down fashion' [Kokfors 2012: p.310].

In this paper, I review recent co-housing research in Europe, searching for the conceptual underlying framework and how it provides evidence for the need to further expand co-housing. The first section discusses (European) publications since 2000 in five thematic clusters: empirical studies; social change; designing community; neighbourhood development and emerging topics. The literature review reveals that factual assessment of the volume and performance of co-housing projects is rare. Despite intensified research, it remains unclear to what extent co-housing initiatives *de facto* contribute to social cohesion and healthy cities. The lack of verifiable quantitative data does little to support the 'believers' who claim that co-housing is 'the third way of housing' of the (near) future. On the other hand, the case for 'cynics' who tend to dismiss the co-housing trend as catering for a privileged minority is at present even less articulated. The lack of quantitative data is partly due to the wide and fuzzy boundaries of co-housing. The review found that publications concern different forms of co-housing (see table 1), and that this variety, the uniqueness of each project, is often emphasised, leading to the question of what holds them together? Which are seen as key- components for what co-housing actually is? Section two examines different conceptualizations of 'co-housing' related to the stakeholder perspective or academic discipline and seeks to understand its key-components.

The conclusions highlight some of the structural drivers behind, or against, co-housing, and the challenges co-housing creates for spatial planning. The integration of co-housing in urban development processes raises questions that go beyond the initiatives' struggle for realization. Before answering such questions, again it needs to be clear what is understood by 'co-housing'. If the evidence from single cases is underpinned with systematic and quantitative studies, co-housing can indeed be relevant for present-day European cities that are struggling with social cohesion and the necessity for community organizing. Co-housing practices can also point the way in which planning practices and paradigms need to change.

The paper is based on desktop research/literature review conducted between July 2011-july 2014, and a number of seminars, meetings and conferences during that same period. The research also involved numerous project-visits, providing empirical evidence to the written sources. However, the analyses of case-studies is beyond the scope of this paper. The author uses 'co-housing' for the wider range of cooperative self-managed housing initiatives and 'cohousing' for the projects based on and belonging to the Cohousing networks.

FRENCH	GERMAN	DUTCH	ENGLISH	ITALIAN
CO				
· Habitat groupé · Habitat Partagé · Habitat solidaire · Cohabitat · Coopératives d'habitants · Habitat communautaire	· Wohngemeinschaft · Genossenschaften · Wohngruppe (für senioren)	· Samenhuizen (Flamand/Flemish) · Woongroepen (voor ouderen) · Centraal wonen · MW²	· Cohousing · Housing co-op · Intentional communities	· Co-abitare · Comune · Cooperativa
AUTO				
· Habitat participatif · Habitat autogéré · Auto-promotion · Auto-construction · Squat	· Baugruppe · Selbstverwaltung · Hausbesetzer	· Zelfbeheer · bouwen in eigen beheer · collectief particulier opdrachtgeverschap · kraken	· Self-help housing · Self-build housing · Squat	· Autogestione
ECO				
· Ecohabitat · Ecovillages · Ecoquartiers	· Ökodorf	· Eco-dorp · Eco-wijk · Ecologisch wonen · MW²	· Eco-habitat · Eco-village · Eco-district	

TABLE 2.1 International terminology for collaborative housing [Bresson 2013/Tummers 2015]

§ 2.2 Literature review: main research themes

Most of the fifty-odd publications studied are geared to the project-scale, trying to identify typical development stages, financial or organizational models, residents' profiles and so on. The aim of the present review is to highlight the underlying assumptions and identify the major issues that the studies address, to explore if there is a 'body of knowledge' rather than a fragmented collection of case-studies. Five clusters of thematics stand out. First, empirical studies and publications by the residents and/or advisors of the projects themselves. Networks such as *Experimentcity*, *Gemeinschaftliches Wohnen*, *Habicoop, Omslag*, Diggersanddreamers, S*amenhuizen* and *kollektivhus* issue publications besides maintaining websites and digital fora, which have become important resources for the implementation of projects. The second cluster addresses demographic change, associating co-housing with moving away from traditional family structures, the emancipation of women and the aging population of Europe. Cluster 3 looks at the architecture of self-governed co-housing, looking for design *criteri*a that contribute to social cohesion and interaction, or focussing on the design *process*, underlining the importance of participation, and cluster 4 concerns the larger scale, neighbourhood regeneration and strategies for urban development. Finally, some new fields emerge, notably research on the legal and economic aspects.

§ 2.2.1 Theme 1: Advocacy; guides and case-studies.

Generally, self-initiated clustered housing, with individual and shared spaces, is seen as to create otherwise unaffordable or inaccessible services, such as: care for very young and aging persons, gardens, playgrounds and child-friendly environments; healthy and off-grid energy systems, car-or equipment pooling, and so on. Co-housing is also a way for local identities under globalization, and to realize new forms of community, *naoborskip* or commons, to combat solitude or make room for alternative values, see figure 2.1 [Krokfors 2012, Vestbro 2010, Lietart 2009, Fromm 2000, Jarvis 2015, 2011].

Co-housing networks have published numerous guides and handbooks, often written by or with help of architects or planners. Although not strictly academic research, they provide considerable information about the current trend. Virtually every handbook underlines that every community and (as a result) each project is unique. Nevertheless, during the planning process a number of recurrent difficulties can be identified: obtaining land, forming a group, planning permission and finance are amongst the most outstanding. The French *Guide Pratique de l'autopromotion* [Locatelli et al,

2011] or the Belgian *Samenhuizen Startgids*[8] for example provide creative solutions for decision-making, affordability and legal and property models, as well as environmental principles of building, energy- waste- and watercycles [Parasote, 2011, Chatterton 2015], issues that are relevant to participative and sustainable development in a wider sense. Provided its qualities are critically reviewed, co-housing projects can make planners understand the new demands for living environments including, for example, renewable energy sources.

Empirical studies often see co-housing initiatives as part of societal change, surpassing the project level. For example, Metcalf describes the history of eco-villages as that of 'intentional communities where environmental sustainability is sought alongside with social justice, peace, etc.' [Metcalf 2004: p10] and hopes his 'rules of thumb' help 'intentional communities to become a model for sustainable living' [Metcalf, 2004: 88]. Meltzer places the highly ideologically steered communities in the periphery of society (and planning) [Meltzer 2000]. Lafond writes in the 'lessons learned' chapter of his handbook: 'Community oriented housing projects really only take on life through their residents .... More and more people sense the impeding crisis, and look for shared, local responses, seeing a great place to begin in their own home!' [Lafond, 2012: 185]. Parasote argues that collective *Autopromotion (*self-developed housing) is not just constructing a building but also a service to society [Parasote 2011]. However, the justification of such claims needs more than empirical evidence in the form of single case-studies. Illustrative is the Leeds-based co-housing project LILAC, described by Chatterton as being 'the first of a new post-carbon concept that integrates low environmental impact with economic justice' [Chatterton, 2013]. However, the applied technologies and concepts are not new in themselves; it is the specific combination that makes the project as unique as any of the co-housing family. experimenting with straw-bale construction was only possible after receiving a £4.5K grant. Moreover, 'economic justice' is rather questionable when 'Due to the minimum net incomes needed to live in the project most members are in employment' [Chatterton, 2013: 6]. Rather, the project addresses the income gap between qualifying for rental benefit and being able to afford home-ownership. Moreover, a study by Sheffield University found that residents in the project were not able to fully exploit the low-carbon features of the LILAC homes, due to life-styles and gaps in the collective learning process [Baborska-Narozny et al 2014].

8 http://issuu.com/samenhuizen/docs/startgids_3_febr_2015_web-versie/1?e=13396442/11445939 [accessed 5 march 2015]

Compared to the amount of qualitative analyses, quantitative assessment is rather scarce. Outside Denmark, co-housing rarely surpasses five, or even one per cent of the housing stock [Tummers 2015]. For academic research, the networks' publications so far are the only 'statistics' as yet available. One explicit attempt to provide an overview is the '*Eurotopia*' directory, coordinated by the eco-village *Sieben Linden* (BRD). In 2013 it listed 430 housing communities in 24 countries, estimated to be about 15-20% of the total in Europe [Peters and Stengel 2014]. The directory illustrates the variety of models and uses 'intentional communities' as an umbrella term. Several research teams are constructing more systematic databases collecting data on size, profile, tenure and so on, for example Fedrowitz for the German 'Wohnbund'[9] or the French database Alter Prop[10]. Vestbro mentions a Swedish database created in the 1990s, though it has not been published[11] [Vestbro 2000].

§ 2.2.2 Theme 2: Changing lifestyles - accommodating the everyday.

According to Vestbro, the cohousing movement represents a rupture with traditional family structures, specifically a break with gender roles in the domestic sphere [Vestbro 2010]. The theorizing of gender and cohousing originated with the Scandinavian interdisciplinary women's research group, in a project called New Everyday Life. It developed the 'intermediate' level between individual private lives and the formal public world as a concept for reorganizing and integrating housing, work and care [Horelli and Vepsä, 1994: 206]. Indeed, contemporary co-housing differs from 'mainstream' housing amongst others by organizing cooking, laundry or child-care in a collective way [Jarvis 2011]. Residents are expected to lend a hand to co-housing neighbours. In a recent update on gender and co-housing, Horelli and Vestbro observe a shift from 'reorganize the everyday' to 'overcome isolation and look for sustainable lifestyles' [Vestbro and Horelli, 2012: 331].

9 www.gemeinshaflicheswohnen.de [accessed June 2014]

10 http://alter-prop.crevilles-dev.org accessed June 2014]

11 Vestbro's inventory counts approximately 75 titles with some indication of the contents but hardly any further comments. The selection criteria for his overview have been rather wide, clustering publications in: history of collective housing; overviews of alternative housing projects; publications discussing gender aspects and children; design aspects of collective housing.

Several authors signal that in Sweden more women than men are interested in cohousing. Sandstedt relates the higher interest amongst women to the larger proportion of senior citizens, the majority of whom are female and single [Sandstedt, 2009]. Sangregorio interprets the interest of (Scandinavian) women in cohousing as a movement to change daily life in small steps rather than creating a completely new society [Sangregorio, 2010: 122]. Women only housing projects have been initiated since the 1980s and continue to be of interest, as recent projects such as *Les Babayagas* in Montreuil (Fr) or *Beginenwerk* in several German towns demonstrate[12]. This may find an explanation in Metcalf's observation that 'Within most *intentional communities*, however, we find traditional gender roles being followed by women and men' [Metcalf, 2004: 100]. Nevertheless, Toker found that women living in USA *cohousing* projects spend more time on their own activities and less on household chores than women living in residencies designed on 'New Urbanism' principles [Toker, 2010]. The question whether co-housing is emancipatory is as yet unanswered, and even less is known about how design criteria may enable an escape from narrow role-patterns. Some insights can be derived from the differences between conservative urban models such as New Urbanism, and the 'creative nostalgia' of US cohousing models [Jarvis and Bonnet, 2013].

French policymakers propose intergenerational co-housing to alleviate the solitude of the elderly and the housing pressure for the young. The intergenerational model is said to appeal especially to young families, who depend on 'grand-parents' to reconcile family life and professional career. Labit compares the French policies of '*habitat solidaire*' (housing based on solidarity) directed at senior citizens in Germany [Labit, 2015]. German policymakers stimulate senior citizens to organize around paid for services, or to participate in intergenerational co-housing to assure assistance when needed. However, as Labit concludes: solidarity is not a natural given, it needs to be made explicit and nurtured [Labit, 2015]. Choi found that many residents in Danish senior cohousing are highly satisfied with their living conditions, but warns that 'it should not be seen as an alternative to nursing homes' [Choi, 2004: 1192 & 1208]. This places co-housing into the heart of current debates about the decline of the European welfare state and the fragile boundaries between positive and negative sides of self-reliance.

According Jarvis 'the lived experiences of co-housing have remained under-theorized' in urban studies [Jarvis, 2011: 561] because first, debates on the re-emerging community trends have been dominated by the 'new urbanism' model going back to the traditional neighbourhood and the role of developers and the state.

12 www.frauenwohnprojekte.de [accessed July 2012].

Secondly, housing is still mostly seen as a separate discipline, and integrative research into the complex of housing, citizenship and sustainable development is still modest [ibid: 562]. Co-housing practices on the contrary integrate these different fields: technical, social and financial structures are made to respond to a central set of values (figure 2.1).

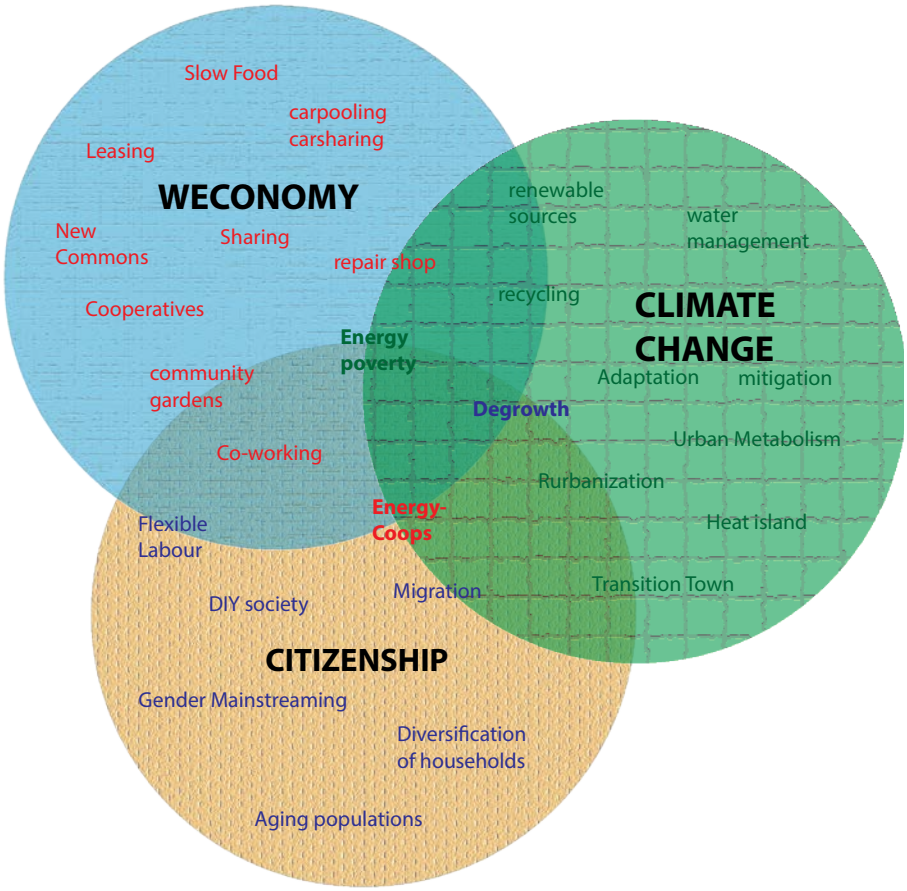

FIGURE 2.1 Co-housing as an integrative practice [Tummers 2015]

§ 2.2.3 Theme 3: Architecture and designing community.

The first study to address the architecture of co-housing is Hayden's analyses of (seven) historical American communities, which she calls utopias. Some of them strictly hierarchical, others (such as Quakers) with a more egalitarian organization. Architectural design is seen as important by the 'utopians', not only to organize the physical space for their activities, but also as expression of their ideals [Hayden, 1979: 33]. Cooper Markus draws similar conclusions upon analysing the architecture of six more recent cohousing projects in Europe, identifying design features contributing to 'a sense of community' both in site plan and building design [Cooper Markus, 2000]. Based on analyses in two communities, Williams identifies similar 'key-design factors that encourage social interaction: proximity to buffer-zones, good-quality, accessible, diverse communal spaces with ample opportunity for surveillance; and finally private units (with restricted facilities).' [Williams 2005; p.222]. Williams recommends further research to determine the 'threshold at which social interaction is deleteriously affected by density' [Williams, 2005: 223]. Fromm's dissertation of 1991 still offers the most comprehensive study about architectural features and planning processes of cohousing projects in USA and Northern Europe [Fromm 1991]. Fromm concludes that 'intermediate spaces' are a key-factor in making communities function. This could be said to be spatial equivalent for the 'intermediate level' identified by the earlier mentioned Scandinavian women's research group. Especially Hayden's analyses make it clear that there is no straightforward relation between urban form, spatial logic and social structure. Williams proposes that cohousing projects allow to investigate the 'relative importance of design factors' [Williams 2005; p.222].

If it is not possible to formulate criteria for 'designing community' in a generic way, the interaction between initiators and architect(s) becomes all the more important. For example: when future residents are involved in the design process, there is 'more acceptance' [Meltzer, 2000] or 'less conflict' [Williams, 2005] once the building is inhabited. This does not apply exclusively for co-housing; neighbourhood organizations amongst others have demonstrated for decades that including user-groups leads to more adequate design proposals. However, Fedrowitz and Ache confirm that the essential characteristics of (German) co-housing are 'the strong involvement of the future inhabitants during the conceptual and planning phase' as well as a certain degree of community or communal spaces [Ache and Fedrowitz, 2012: 395].

In planning theory, 'collaborative' refers to the involvement of stakeholders and diverse governmental departments in an integrated planning process [Healey 1997, 2006]. In planning practice, the position of inhabitants is often weak, despite legal consultation requirements. Furthermore, planning law, housing allocation regulations, management structures, location criteria and design typologies may work out

differently for distinct 'user groups'. An extensive study for the French Ministerial institute PUCA[13] showed that the quality of the living arrangements depends to a large extent on the balance in decision-making between residents, institutional partners and consulting professionals [Biau and Baqué, 2010] and this is also observed in other case-studies [see for example Fromm, 2012; Tummers 2012]. The 'hybridization of knowledge' in a co-creation process, in other words: who is the expert on what field, presents a serious challenge to the current top-down planning cultures [Biau and Bacqué, 2010:131]. How far apart the perception of quality by residents and by architects can be, is illustrated in the Belgian 'Manifesto *Wonen in Meervoud* (housing in plural)' [Van Herck and de Meulder 2009]. The Manifesto states that 'housing in plural' combines privacy and community; allows for mixed use and diverse dwelling typology; creates informal meeting places and integrates environmental heritage as well as reducing the ecological footprint through building technology and efficient infrastructure', a profile that fits most co-housing projects. To do this within regular budgets requires high professional skills from architects and urban designers. The text and pictures of 'housing in plural' highlight such outstanding architecture, but without human presence to illustrate the success for everyday reality of use and management.

§ 2.2.4 Theme 4: Neighbourhood development: island or oasis?

In the present European context, planning cultures and housing regulations often function as a selection process. In order to survive as serious planning partners, co-housing members need to have a certain level of education and network-capabilities. Sociological studies confirm that co-housing inhabitants are predominantly well-educated, middle-income households [Bresson and Denefle, 2015]. Despite aspirations to a mixed income structure, projects hold the risk of segregation [Ache and Fedrowitz, 2012]. On the other hand, local authorities perceive such 'resilient' groups as opportunities for vulnerable inner city areas. The study '*Collaborative Housing as a Strategy for Social and Neighbourhood Repair*' giving examples in run-down neighbourhoods in California, Japan, Germany, and the Netherlands [Fromm 2012]. Fromms' critical analyses of realization processes, as well as the evaluation of community life and outreach, make it clear that success depends to a large extent on aspects beyond the projects themselves, such as: culture, workload, urban infrastructure, and other investments in the area. Williams' optimistically entitled '*Designing Neighbourhoods for Social Interaction: the Case of Cohousing*' looked at

13 (in translation: Urban Development Construction and Architecture Plan; an institute for knowledge development on the environment)

social interaction within two US co-housing projects of 20-25 units each, as examples for 'resilient neighbourhoods' [Williams, 2005]. Unfortunately, the paper does not specify how the experience can be applied on larger, less organised neighbourhoods. Other authors signalled that, for co-housing to play a role in neighbourhood development, it needs to be open for non-residents and to be inserted into the urban fabric [Marcus, 2000; Fromm 2012]. This is a controversial principle after decades of privatising the sem-public spaces in garden cities, and may not always be possible. Because of their special qualities, projects need fences or supervision to protect vulnerable systems, such as water purification systems or ecological playgrounds [Tummers 2012]. Therefor, although a number of projects have managed to become 'urban oases', the claims for a wider and lasting impact still need to be underpinned with evidence and an analysis of specific conditions. Looking at 'lessons learned' from co-housing initiatives in Germany, Fedrowitz and Gailing [2003] introduce some profound dilemmas, among them the ambivalent effects of gentrification, and the increased commodification of co-housing versus the idealist, wished for, environments.

According to Chiodelli, most authors over-estimate the positive side of co-housing. His paper defines an overlap with 'gated communities', which may have negative effects in neighbourhoods [Chiodelli 2010]. However, the paper mainly compared the value systems on paper and formal organizations of different housing initiatives, whereas crucial differences lie in the everyday practices and design features, such as opening the common gardens or services to outsiders or not. Ruiu's comparative study identifies crucial differences and concludes that a grass-roots model is typical of cohousing whereas gated communities are the product of top-down speculative schemes [Ruiu 2014].

When co-housing is to be part of sustainable urban development, the conditions for inclusive, collaborative housing initiatives to become exclusive, walled in fortresses, is relevant for planners. A study by the Wüstenroth Foundation showed how German cities made inner city development based on *Baugruppen* (cooperative self-development) successful [Krämer and Kuhn, 2009]. The authors see this as an adequate response to contemporary demographic and environmental developments. The long-term expectation of so-called 'bottom-up urbanism' is that it will keep citizens' involved in neighbourhood governance. Well-known examples are the former French military areas, isolated parts of south-German towns, developed almost entirely through '*Baugruppen*'. In these cases, a top-down planning framework influenced the degree of openness and neighbourhood integration [Bresson and Tummers, 2014]. Based on Berlin experiences, Droste also concludes that local authorities' role is vital for the inclusiveness of co-housing [Droste, 2015].

§ 2.2.5 Theme 5: Emerging issues: financial and legal aspects

The potential of co-housing is not only seen in urban development: a developing area of study is the significance of co-housing models for rural areas with shrinking populations. Wankiewizc discusses several cases in Austria to find a positive response to maintaining everyday services [Wankiewizc, 2015], whereas Spellerberg found resistance from local authorities in rural areas of southern Germany against self-organised housing initiatives [Spellerberg, 2014]. In most papers however, location is not considered essential. For example, the terms co-housing and eco-villages (or rural initiatives) are used as equivalents in an assessment of the ecological performance of self-governed housing [Marckmann, Gram-Hanssen and Christensen, 2012].

Co-housing projects differ from established property and financial models in their collective nature as well as the shifting role of residents in planning and management. For example: can legal instruments secure in-between spaces as a key-element between private and public? Most network fora and handbooks provide evidence of the frictions this causes, and how they can be solved. Legal and institutional obstacles were investigated in a research program called *Alter-Prop:* 'Alternative ways for property, shared ownership and eco-/solidary cohousing' [14]. The research differs from earlier studies in that it examines long-term developments and places empirical data in a framework of legal and sociological theory. [Bresson and Denefle, 2015]. Fenster signalled that, while the cooperative seems an appropriate legal form for cohousing, most collectives organize as condominiums, since banks are hesitant to fund cooperatives [Fenster, 1999]. Scanlon and Fernandez saw this confirmed in their London case-study, and in addition found that it is difficult for groups to discuss finance because of cultural taboos [Scanlon and Fernandez, 2015].

One example of the institutional implications is the concept of mixed tenure within one building structure. During the centralised social housing regime of the 1980s *Centraal Wonen* (the Dutch Cohousing branch) created projects in partnership with housing institutions, consisting mainly of subsidized rental units [www.lvcw.nl accessed January 2015]. Contrary to the present-day situation, housing distribution regulations made these projects virtually inaccessible for households with incomes (slightly) above threshold. In the 1990s Dutch housing policy has become more geared to individual plot- and home-ownership. Several projects implemented mixed forms of tenure for individual houses, common rooms and outdoor space, creating for different

14 François-Rabelais University Tours/CNRS Maison des Sciences de l'Homme Val de Loire; Equipe CITERES - Cités, TERritoires, Environnement. The project build a database, containing more than 300 projects and a large number of bibliographical and networking data: http://alter-prop.crevilles-dev.org.

levels of financial accessibility. After 2000, partnership with housing associations has mostly been reduced to financial back-up and in practice the collaborative projects are now more similar to the German *Baugruppen*. Nevertheless, some researchers consider all generations in the same category without considering the different ambitions or policy contexts. For example: the evaluation of the post-2000 housing policy results includes co-housing projects from the 1990s [Boelens and Visser, 2011].

The present literature review found that knowledge around co-housing is diversifying, and language barriers begin to be crossed, for example in the first European Conference on Co-housing Research, held in March 2012[15]. But although more information is available, fact finding, systematic comparison and contextualizing is still rather scarce and Fromm's comment in 2000 that 'much literature is centred on advocacy' is still valid today [Fromm, 2000: 91]. Moreover, the absence of institutional context may lead to misreading of case-studies, for example '*Community Architecture in Nederland*' describes the mainstreaming of elements of diverse resident-led housing without taking into account the influence of the planning regimes under which they were build [van der Woude 2012]. Finally, each discipline has a different conceptualization of co-housing, and even within one field the object of study is not necessarily well outlined. Such broad and therefore fuzzy conceptualization creates the risk to compare apples and oranges. It is necessary to take a closer look at the types of projects included in co-housing research: do they need to be fully 'community led', or do participative projects for the elderly, managed by a housing association, also count? Is there a minimum number of households involved? What are the boundaries with neighbourhood initiatives and gated communities? The following section looks at the historical references authors select; and attempts to classify based on the 'co-'element of housing.

§ 2.3 Delineages and conceptualisions of co-housing

Community housing projects have existed throughout history and in all continents [Poldervaart 1987, Hayden 1979, Bürgerburo 2009, Coates 2009]. The history section in Vestbro's 2000 inventory lists studies that go back to the 1920s and earlier, such as the 'one kitchen house', socialist collective housing, or communities based on the ideas of Fourier [Vestbro 2000]. Many studies refer to historical examples, both theoretical

15 http://alter-prop.crevilles-dev.org/ressources/items/show/1267 [accessed 25 may 2013].

utopias as well as built projects, through an ideological component. Poldervaart for example, emphasizes the search for alternatives: 'Intentional communities can be identified by a deliberate attempt to realize a common, alternative way of life outside mainstream society'. She classifies collective self-managed housing initiatives as 'Foucaultian freedom practices' [Poldervaart 2002: p20]. Meijering et all use 'remoteness' as classifier for rural communities [Meijering et all 2009]. Co-housing is often related to the squatter's movements of the 1980s [see for example Droste & Knorr-Siedow 2012]. Indeed, some of the flagship co-housing projects in Germany and the Netherlands have been initiated as protest-occupations of real estate and have meanwhile become a new type of institution. Political scientist Maury also interprets the 21st century re-emergence of *cooperativism* in France as a turning away from exploitative, social, economic, as well as ecologic practices [Maury, 2009]. However, not all historical models can be said to be bottom-up creations. The, often quoted, *Familistère*, for example, built 1859 in Guise (France) to improve conditions for factory workers, represents a distinct life-style, hierarchical organization (based upon socialist ideas) and a top-down design. The paternalist, hierarchical views underlying some utopian experiments are fundamentally different from contemporary horizontal co-housing organizations.

Recent literature has described the re-emergence of co-housing as pragmatic, rather than utopian. The architectural review Arch+ described the new forms of self-organized co-housing in Germany (*Baugruppen*) as attempts to create 'more efficiency in the organization of family-life' [Kläser 2006]. In other words, only a specific part of contemporary co-housing initiatives consists of (radically) idealist communities. The earlier mentioned Scandinavian 'New everyday' research group identified a rational ancestor of co-housing in Europe during the1920s: individual flats with shared, paid for services including a restaurant, replacing traditional individual household servants. Sharing domestic work and residents volunteering became a feature of new co-housing projects only in the 1980s [Horelli & Vepsä 1994; p.206]. In France, similar architectural models were developed, including common rooms, such as roof terraces, laundries and other services, for example, *the Unité d'habitation or Cité Radieuse* in Marseille (1952) and the *Maison Radieuse* at Rezé/Nantes (1955), designed by Le Corbusier. Both were managed by owner-cooperatives until cooperative property had to be dissolved by law in 1971[16] [Denefle et al 2006]. This line of thinking was further developed by Jarvis, who points at the ambiguity of efficiency of sharing domestic work: "Indeed, the commitment most cohousing residents demonstrate toward environmental conservation, volunteering, and the development of community

16 the so-called 'Loi Chalendon' suppressed cooperative property and collective management in favour of home-ownership. It was accepted in French parlement in 1971.

initiatives arguably adds a `second shift' to income-generating activities." [Jarvis, 2011: 564]. Amongst others, Jarvis found that people are attracted to cohousing as an alternative to capitalism and the effects of neo-liberalism without 'having to enter a commune' [Jarvis 2012]. Based on Finnish experience, Korpela concludes that there are currently three types of collaboration: serving a common ideal, sharing everyday arrangements, or building together [Korpela 2012].

Another historical lineage is made to the mutual self-built movements, for example *Les Castors* (The Beavers), a trade-union initiative in the post-war period, in France often quoted as precedent for *Habitat Participatif* [Lejeune 2009]. The *Castors* essence was to mutualise labour force for building rather than local community building, a model more related to '*Baugruppen*' than to 'Cohousing'. In Germany, the UK and Scandinavia the self-building movement has a parallel history with some overlap to contemporary co-housing, however in most cases building and maintenance is outsourced [ww.selfbuildportal.org.uk November 2013; Minora et al, 2013]. Benson calls for a reconsideration of terminology and proposes to replace 'self-built' with 'self-procurement' to emphasize resident-steered housing development, including individual plots as well as collectives [Benson, 2014]

As a movement, 'cohousing' refers to a specific model of grouped housing with individual household units and shared spaces[17]. Since its appearance in the 1980s in Denmark and Sweden, the cohousing movement spread mainly to the Netherlands, UK and USA. The model developed and distributed through an international network of national organizations, such as *Kollektivhus* in Sweden or *Centraal Wonen* in the Netherlands, and new networks have emerged such as *Samenhuizen* in Belgium and *Habicoop* in France.

Contemporary initiatives in Europe do not necessarily belong to the cohousing movement. The overall profile of urban co-housing initiatives, the more visible part of the recent co-housing trend, corresponds to a group of predominantly middle income households (with few exceptions such as *L'Espoir*, Brussels) embedding itself in clustered housing in inner city locations. They seek the benefits of the city, such as the proximity of schools, culture, jobs and services, avoiding suburban disadvantages such as mono-functionality, isolation and car-dependency. However, some suburban qualities are brought along, such as gardens, space for children, or village-like settings

17 "Cohousing is a type of collaborative housing in which residents actively participate in the design and operation of their own neighbourhoods. Cohousing residents are consciously committed to living as a community. The physical design encourages both social contact and individual space." (http://www.cohousing.org/what_is_co-housing 24 august 2010) see also http://www.cohousing.org.uk; and in Dutch: lvcw.nl

for informal interaction and small-scale enterprises. On the other hand, recent Dutch initiatives under the flag of '*eco-dorpen*' (eco-villages) combine the ideals of the 1970s 'back to nature movement' with features of 21st century 'network cities'. New communication technologies as well as flexible labour hours and shared transport are transforming the classical models of villages and urban residential areas into new, hybrid designs which combine the best of two worlds (figure 2.2).

For planners, the choice of location is more significant than ideological features, as zoning plans, infrastructure and housing market show crucial differences on local level. Location characteristics such as the availability of services, playgrounds and gardens, or public transport, affect the living conditions, and the priorities set for the design of co-housing ensembles. On the other hand, the impact of co-housing initiatives will be diverse according to the scale and density of its environment. The constituent elements of co-housing are primarily the amount of shared space (planning substance) and the degree of self-reliance (planning process).

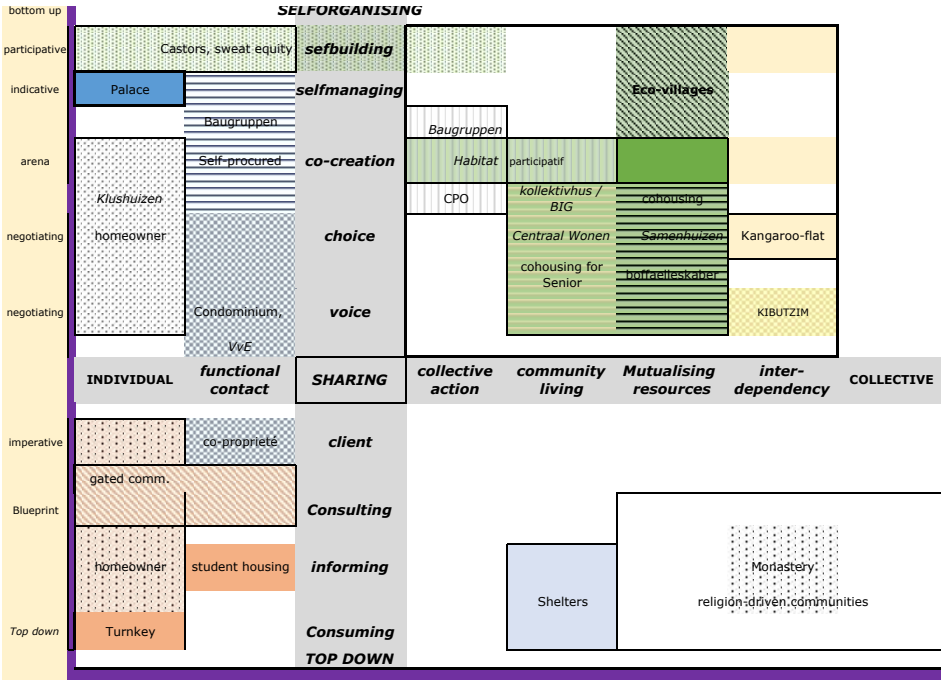

FIGURE 2.2 Realm of co-housing from a planning perspective [Tummers 2015]

TOC

Typically, cohousing residents want control over design and development and remain active in use and management of their shared location. In the wider range of initiatives, there are different grades of community involvement: from full self-control and co-creation to a more guided participatory process for vulnerable groups [Fromm 2012, Labit 2015]. Co-management and communal living may intensify after a joint building process, or minimise over time. While the scope of new co-housing projects is widening, many scholars continue to use 'cohousing' as a generic term. Classifications are made according to the intensity of interaction and collaboration between residents, see for example *Jonckheere, samenhuizen.be 2012*. Vestbro proposes a reading of the 'co' as 'collaborative', 'communal' *and* 'collective' thus including the wide variety of practices (table 2.2). He explicitly excludes 'cooperative' as referring only to the tenure structure. For example: in the UK 'cooperative housing' is indeed a distinct, formally defined model. Nevertheless, many projects show renewed interest traditional cooperative models such as *Genossenschaften*, or Italian, Spanish or Polish housing coops [Coudroy de Lille, 2015].

PROPOSAL FOR DEFINITION OF DIFFERENT TYPES OF CO-HOUSING	
Cohousing	Housing with common space and shared facilities
Collaborative housing	Housing oriented towards collaboration by residents
Collective housing	Emphasising the collective organization of services in housing
Communal housing	Housing for togetherness and sense of community
Commune	Living without individual apartments
Cooperative housing	Cooperative ownership without common spaces or shared facilities, therefor not co-housing

TABLE 2.2 Definition Of Different Types Of Co-Housing by Vestbro 2010 / [source: Dick Vestbrø, Kollektivhus.nu Vestbrø 2010: p.29]

Fedrowitz and Gailing observe that in co-housing 'the organizational unit overlaps the spatial entity' [Fedrowitz and Gailing, 2003: 33]. Linking the 'co-' explicitly to the spatial dimension implies 'self-management' (which may involve outsourcing) and excludes institutionalized management by an external central office such as traditional *Genossenschaften* (German housing cooperatives) or condominiums, and can thus absorb many hybrid forms of co-housing.

§ 2.4 Conclusions

Empirical studies demonstrate the success of co-housing for social and environmental sustainability, and for creating vital urban environments. Most studies stem from the Nordic, Anglo or German-speaking countries but recently significant contributions have come from France. Major themes, besides the manifold practicalities of realizing a co-housing project, are: demographic change and gender roles, the impact on the neighbourhood, criteria for design and social interaction, and the relatively new fields of legal property and planning implications. The variety of historical references that authors use shows that co-housing initiatives are not exclusively based on utopian or community housing experiments, but also pragmatic answers to societal need such as everyday service, energy or cost-savings and accessibility. Although many projects apply new technologies of climate-neutral building and installations for energy and water cycles, hardly any study assesses the eco-engineering and energy-performance of self-managed clustered housing.

Contemporary co-housing is a resident-led practice that provides a realistic and qualitative solution for highly committed citizens. Some authors argue it can be up-scaled to a wider model for housing provision, but there are also doubts about the elitist features and wider acceptance of the model. Co-housing is promoted as an opportunity for more sustainable urban development, and Top-down urban development may perceive co-housing groups as resilient agents of change, specifically for brownfield development and gentrification. In this way, co-housing is embedded in debates on the spatial aspects of social cohesion and gentrification. However, the relation between cause and effect in gentrification processes needs to be further established and the experiences of co-housing residents themselves have so far not been reported. Moreover, for each successful project there are also a number of stranded or halted initiatives. Often this is due to the time needed to realise projects; initiators may move on and leave the project. Such initiatives go largely unrecorded, but offer other opportunities for learning.

Furthermore, co-housing is part of a wider movement looking for new practices to mediate local identity and globalisation; self-reliance and state-provision; and introducing pluri-value instead of monetary-based economic models. As Helen Jarvis has argued, such 'lived everyday practices' need to be more theorized in Urban Studies.

Finally, the absence of quantitative data, partly due to the dynamic nature of co-housing, should be repaired to verify claims of co-housing as recipe for sustainable urban development.

Although land-use and planning meet co-housing in many ways, there is little research available to properly assess the impact of different planning cultures on the quality of projects, and on lessons that can be derived from co-housing for more collaborative planning cultures. All projects imply some form of participation and negotiation with planning authorities. In urban policies, co-housing is usually associated with commitment, accessibility, community, and social cohesion. The underlying expectations are that co-housing communities interact positively with the neighbourhood, yet little is known about the conditions for co-housing to maintain such openness. For example, planners could look at the environmental conditions such the lack of green space or attractive playgrounds nearby that may cause too much pressure on semi-public gardens.

Co-design is an essential characteristic of co-housing projects, in most cases going beyond participation. During the planning process, many confrontations occur, for example with housing norms, subsidy regulations, zoning plans, energy performance, and certified technology. This makes it necessary for residents to compromise on the initial ideal model while its full potential remains overlooked by planners or underused in the urban environment.

Co-housing initiatives contribute insights to new demands on urban development institutions. If the evidence from single cases is underpinned with systematic and quantitative studies, co-housing processes may be relevant for present-day European cities that are struggling to maintain social cohesion. Planners are able to check expectations against reality. To what extent do roles of stakeholders need to be re-defined and re-organized? What is the impact of planning culture and attitudes of planners and consultants on the projects? How can the accommodation of mixed income households (rather than an elitist minority) and long-term involvement in the project-management be assured? A new framework is needed, that can absorb both the universal characteristics of the trend as well as locally specific environmental and institutional factors.

Further research could examine co-housing as the citizen's challenge to institutional planning, housing distribution, division of labour and services of care and assistance, rather than as 'idealist experiments'. Co-housing initiatives present micro-laboratories for new urban models for social interaction and low-impact living, both during and after the design process. Ultimately the question is how to incorporate changing values and urban cohabitation cultures into institutionalized planning decisions. Co-housing studies do not need advocacy to inspire, and invite planners to critical self-examination.

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REFERENCES Literature review

Ache, Peter, and Micha Fedrowitz. 2012. "The Development of Co-Housing Initiatives in Germany." *Built Environment* 38 (3) (July): 395–412.

Baborska-Narozny, Magdalena, Fionn Stevenson, and Paul Chatterton. "A Social Learning Tool - Barriers and Opportunities for Collective Occupant Learning in Low-Carbon Housing." *Sustainability in Energy and Buildings*, 2014, 10.

Benson, Michaela. *Creating a Nation of Selfbuilders. An Interim Report from the Project Selfbuilding: The Production and Consumption of New Homes from the Perspective of Households*. London: Department of SOciology, GOldsmith, 2014. http://www.gold.ac.uk/media/Benson-Creating%20a%20nation%20of%20selfbuilders.pdf.

Biau, Veronique, and Marie-Hélène Baqué. *Habitats alternatifs : des projets négociés ?* Paris: ENSA Paris-Val de Seine, 2010.

Boelens, Luuk, and Anne-Jo Visser. "Possible Futures of Self-Construction: Post-Structural Reflections on Ten Years of Experimentation with (C)PC." In *Making Room for People: Choice, Voice and Liveability in Residential Places*, edited by Lei Qu and Evert Hasselaar, 103–28. Amsterdam: Techne Press, 2011.

Bresson, Sabrina, and Lidewij Tummers. "L'habitat participatif autogéré en Europe : vers des politiques alternatives de production de logements ?" *Metropoles* Politiques alternatives de développement urbain, no. 15 (December 2014): PM.

Bresson, Sabrina, and Sylvette Denefle. "Diversity of Self-Managed Cohousing Initiatives in France." *Journal of Urban Research and Practice* 8, no. 1 (March 2015).

Bürgerbüro Stadtentwicklung. 2009. *Die erfindung des Gemeinschaftliches Wohnens von 1885 bis heute*. Hannover: Stadt Hannover.

Chatterton, Paul. 2013. "Towards an Agenda for Post-carbon Cities: Lessons from Lilac, the UK's First Ecological, Affordable Cohousing Community." *International Journal of Urban and Regional Research*. doi:10.1111/1468-2427.12009.

Chiodelli, Francesco. 2010. "'Enclaves' Private A Carattere Residenziale: Il Caso Di Co-Housing." *Rassegna Italiana Di Sociologia* 51 (1): 95–116.

Choi, Jung Shin. 2004. "Evaluation of Community Planning and Life of Senior Cohousing Projects in Northern European Countries." *European Planning Studies* 12 (8): 1189–1216.

Cooper Markus, Clare. 2000. "Site Planning, Building Design And A Sense Of Community: An Analysis Of Six Cohousing Schemes In Denmark, Sweden, And The Netherlands." *Journal of Architectural and Planning Research* 17 (2): 147–163.

Coudroy de Lille, Lydia. "Housing Cooperatives in Poland. The Origins of a Deadlock." *Journal of Urban Research and Practice* 8, no. 1 (March 2015).

Droste, Christiane. "German Co-Housing: An Opportunity for Municipalities to Foster Socially Inclusive Urban Development?" *Journal of Urban Research and Practice* 8, no. 1 (March 2015).

Droste, Christiane, and Thomas Knorr-Siedow. 2012. "Politics and Cultures of Community-oriented, Self-organized Housing in Europe – Typologies, Orientation and Motivations." In *CoHousing Cultures. Handbook for Self-Organized, Community-oriented and Sustainable Housing*, by Michael Lafond. Berlin: Jovis-Verlag.

Fedrowitz, Micha, and Ludger Gailing. 2003. *Zusammen Wohnen. Gemeinschaftliche Wohnprojekte Als Strategie Sozialer Und Ökologischer Stadtentwicklung*. Blaue Reihe; Dortmunder Beiträge Zur Raumplanung 112. Dortmund: IRPUD.

Fenster, Marc. 1999. "Community by Covenant, Process, and Design: Cohousing and the Contemporary Common Interest Community." *Journal of Land Use & Environmental Law*.
Fromm, Dorit. 1991. *Collaborative Communities: Cohousing, Central Living, and Other New Forms of Housing with Shared Facilities*. Van Nostrand Reinhold New York.
Fromm, Dorit. 2000. "Introduction To The Cohousing Issue." *Journal of Architectural and Planning Research* 17 (2): 91–93.
Hayden, Dolores. *Seven American Utopias, The Architecture of Communitarian Socialism, 1790 - 1975*. Needs biblio data. Cambridge (USA): MIT press, 1979. http://mitpress.mit.edu/books/seven-american-utopias.
Healey, Patsy. 2005. *Collaborative Planning: Shaping Places in Fragmented Societies*. ?: Palgrave Macmillan.
Herck, Karina Van, and Bruno De Meulder, ed. 2009. *Wonen in Meervoud. Groepswoningbouw in Vlaanderen 2000-2010*. Amsterdam: SUN Architecture.
Horelli, Liisa, and Kirsti Vepsä. 1994. "In Search of Supportive Structures for Everyday Life." In *Women and the Environment*, edited by Irwin Altman and Arza Churchman, 201–226. New York: Plenum Press.
Jarvis, helen. 2012. "Against the 'tyranny' of Single-family Dwelling: Insights from Christiania at 40." *Gender, Place & Culture: A Journal of Feminist Geography*. doi:10.1080/0966369X.2012.753583.
Jarvis, helen. 2011. "Saving Space, Sharing Time: Integrated Infrastructures of Daily Life in Cohousing." *Environment and Planning* 43 (3): 560–577.
Jarvis, helen, and Alastair Bonnet. "Progressive Nostalgia in Novel Living Arrangements: A Counterpoint to Neo-Traditional New Urbanism?" *Urban Studies* 50, no. 11 (August 2013): 2349–70.
Kläser, Simone. 2006. "Selbstorganisiertes Wohnen." *Arch plus* (176-177): 90–96.
Krämer, Stefan, and Gerd Kuhn. 2009. *Städte und Baugemeinschaften*. Stuttgart + Zürich: Karl Krämer Verlag. wuestenrot-stiftung.de.
Krokfors, Karin. 2012. "Co-Housing in the Making." *Built Environment*: 309–314.
Labit, Anne. "Self-Managed Co-Housing in the Context of an Ageing Population in Europe." *Journal of Urban Research and Practice* 7, no. 1 (March 2015).
Lafond, Michael, ed. 2012. *CoHousing Cultures: Handbuch Für Selbstorganisiertes, Gemeinschaftliches Und Nachhaltiges Wohnen / Handbook for Self-organized, Community-oriented and Sustainable Housing*. Berlin: Jovis Verlag GmbH.
Lejeune, Lucy. 2009. "Habiter autrement, du squat à la coopérative d'habitants Entre innovation et transformation sociale". Grenoble: Institut d'Etudes Politiques de Université Pierre Mendès France. http://www.habicoop.fr/IMG/pdf/Memoire_habiter_autrement.pdf.
Lietart, Matthieu. 2012. *Le cohabitat. Reconstruisons des villages en ville!* Brussels: Editions Couleur Livres aslb.
Locatelli, Daisy, François Desrues, and Jean-Marc Biry, ed. *Guide Pratique de l'Auto-promotion*. Strasbourg: Association Eco-Quartier Strasbourg et CAUE Bas-Rhin.
Maury, Yann, and Bernard, ed. 2009. *Les Cooperatives D'habitants: Une Troisieme Voix Pour Le Logement?* Bruxelles: editions Bruylant.
Meltzer, Graham. 2000. "Cohousing: Verifying the Importance of Community." *Journal of Architectural and Planning Research* 17 (2): 110–132.
Metcalf, William. 2004. *The Findhorn Book of Community Living*. Forres, UK: Findhorn Press. http://www.findhornpress.com/index.php?main_page=product_info&products_id=87.
Parasote, Bruno. 2011. *Autopromotion, habitat partagé, écologie et liens sociaux*. Strassbourg: Yves Michel.
Peters, Volker, and Stengel, ed. 2005. *Eurotopia. Intentional Communities and Ecovillages in Europe*. Bandau-Poppau: Oekodorf Sieben Linden: Volker Peters Verlag.
Sangregorio, L. 2010. "Women..?" In *Living Together. Cohousing Experiendes Around the World*, edited by Dick Vestbro, PM. Royal Institute of Technology division of urban studies in collaboration with Kollektivhus NU.
Sansted, Eva. 2009. "Beyond the Nuclear Family - A New Culture of Living in the Cities?" In Proceedings ENHR Praag.
Scanlon, Kath, and Melissa Fernández Arrigoitia. "Development of New Cohousing: Lessons from a London Scheme for the over-50s." *Journal of Urban Research and Practice* 8, no. 1 (March 2015).
Spellerberg, Annette, and Pia Gerhards. 2014. "Cooperatives and Co-Housing of Older People. German Case Studies in Rhine-Land-Palatinate." In *From Control to Cocreation*. Utrecht/Delft,.
Toker, Z. December 2010. "Gender & Cohousing." *Journal of Architectural and Planning Research* 27 (4): 325–339.
Tummers, Lidewij. "Understanding Co-Housing From A Planning Perspective: Why And How?" *Journal of Urban Research and Practice* 7, no. 1 (March 2015). doi:http://dx.doi.org/10.1080/17535069.2015.1011427.

Tummers, Lidewij. 2013. "Co-housing: Pioneers of Eco-engineering." In Tarragona: ENHR. http://www.enhr2013.com/paper-submission/list-of-papers/.
Vestbro, Dick, ed. 2010. *Living Together- Co-housing Ideas and Realities Around the World*. Stockholm: Royal Institute of Technology division of urban studies in collaboration with Kollektivhus NU.
Vestbro, Dick. 2000. "From Collective Housing to Cohousing — a Summary of
Research." *Journal of Architectural and Planning Research* 17 (2): 164–177.
Vestbro, DU, and Liisa Horelli. 2012. "Design for Gender Equality: The History of Co-Housing Ideas and Realities." *Built Environment* 38 (3): 315–335.
Wankiewicz, Heidrun. "The Potential of Co-Housing for Rural Austria." *Journal of Urban Research and Practice* 8, no. 1 (March 2015).
Williams, Jo. 2005. "Designing Neighbourhoods for Social Interaction: The Case of Cohousing." *Journal of Urban Design* 10 (1): 195–227.

3 Background

From global to local

Introduction

This chapter looks at the underlying principles of the co-housing initiatives, as response to three major global transformations, often described as 'crises'. The wider global dynamic influences the political and planning discourse institutional strategies and civic initiative. At multiple scale levels actors articulate response in a specific way: international institutes attempt to reach agreement on strategic development goals; regional networks generate spatial development proposals and grass-root initiatives take local action. The (re-)emergence of co-housing (and to a lesser extent CPO/*Baugruppen*) is generally perceived as a part of this local response together with urban agriculture, energy coops, car-sharing, repair cafés and so on. The actions of institutions, grass-root organisations and urban designers, present a discourse based on common values. These core-values inform the design choices, which materialise during the planning process. The chapter explains the framework chosen for the interaction between co-housing initiatives and their institutional partners, in an urban, European context.

§ 3.1 Global challenges

The incentive for co-housing in the 21st century is marked by a backdrop of a triple global crisis, of which two elements are now generally acknowledged:

– The *economic* crisis, intensified since the credit crunch in 2008; followed by a collapse in public investments, including in housing provision [CBS, EIB]. The dominant response of the public sector has been austerity policies that have produced deep changes in the economic conditions of most states, including in local and international labour markets. The diminishing of public provision has also affected the accessibility of the housing market. Besides lack of investments and subsidized provision, housing support and finance is also bound to stricter regulations [see for example Nieboer and Gruis, 2016]. Access to housing is essential for households and individuals to gain or maintaining access to urban resources such as security, income, education and

healthcare on which households affected by the economic crisis specifically need to rely. In Europe, having an official 'address', even a temporary one, is a prerequisite to a 'legal' existence, without which 'civil rights' are hardly attainable. 'Home' is anchor-point for citizenship [Blokland et al., 2015]. Chapter 5 highlights how this has become an incentive for co-housing initiatives, and chapter 6 illustrates how co-housing concepts are penetrating the Dutch housing market, while large-scale investments have been paralysed during the credit crunch.

– The *environmental* crisis as consequence of (two) centuries of industrialization through unsustainable use of resources such as fossil fuels, drinking water and forests, as well as over-production of waste and disposable artefacts [IPCC 2014, COP21[18]]. In addition, the need for adaptation and mitigation to anthropogenic *Climate change,* enhancing risks of extreme weather conditions, flooding and disturbance or disappearance of biospheres and eco-systems, is increasingly influencing spatial policies. Reducing energy demand and the transition from fossil-based to renewable based energy-supply is part of the strategies addressing the climate crisis. As is gradually becoming clear, this has significant spatial impacts, such as changing landscapes (wind-turbines) and agriculture (biomass), decentralizing networks (solar, marine) and changing mobility (all-electric). The housing stock is an important energy-consumer and its transformation is a priority in EU as well as national policies, but implementation is slow [Maldonado, 2012]. Chapters 4 and 8 focuss on this aspect.

At the same time, but receiving less attention, a '*care*' crisis is occurring, brought on by demographic change (In Europe: aging populations, lower birth and death rates). Combined with the retreat of the welfare state, the immediate consequences of this crisis include a shortage of public services for health, sanitation, education and so on, as well as a lack of human resource and attention to the needs of dependent groups, such as children, elderly and migrants. Domestic migrant workers fill the gap, often in precarious conditions [Isaksen, 2008; Sassen, 2002]. The impact on households such as shortage of time, increased stress and burn-out phenomena in their turn weigh again on public budgets. Globally the responsibility for care-related work (also called 'domestic labour') is largely in the hands of women[19], and the recognition as well as improved conditions are in the core of gender equality strategies such as Gender Mainstreaming[20].

18 www.c2es.org/docUploads/cop-21-paris-summary-02-2016-final.pdf

19 EUROSTAT (2015), *Gender statistics,* http://ec.europa.eu/eurostat/statistics-explained/index.php/Gender_statistics (accessed 1 December 2015).

20 http://standard.gendercop.com/about-the-standard/what-is-gender-mainstreaming/ and http://ec.europa.eu/social/main.jsp?catId=421&langId=en

This 'triple crisis' generates besides the specific agenda's also the need to consider the interdependency of economy, environment and people. This was first signalled in the 'Brundlandt report' in section 2 entitled 'the interlocking crises' [UNWCED, 1987] and further elaborated as the triple P of people, planet and prosperity [Campbell, 1996, Roberts, 1962 Elkington, 1994]: see figure 3.1. This principle is key in the definition of sustainability, and is now well-known in environmental policies; see for example figure 3.2.

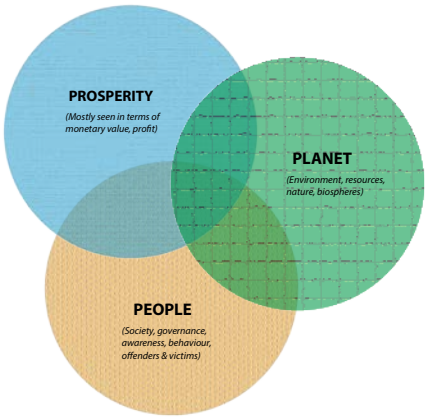

FIGURE 3.1 The classical 'people planet prosperity' triangle underlying concepts of sustainability.

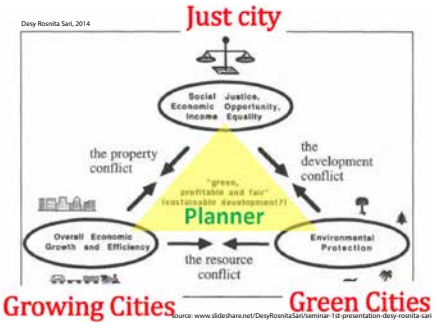

FIGURE 3.2 People Planet Prosperity as pictured by Desy Rosnita Sari (2014)

§ 3.2 Institutional response: goals and agendas

The 'triple crisis' is invoking institutional action, for example from the European commission, the UN, national governments, regional authorities, 'fair trade' and 'green' industrial certification authorities, semi-public service providers and so on. A globally common understanding of the urgency of the triple crisis has been agreed in 2015, as the UN sustainable development goals 2030[21] (SDG2030). The global consensus on the SDG2030 was achieved almost 30 years after the concept of 'sustainable development' was introduced in the so-called Brundtland report [UNWCED 1987] and the millennium development goals (MDGs), which were

21 http://www.un.org/sustainabledevelopment/cities/- [accessed 7 February 2017]

formulated after the first 'oil crisis' of the 1970s. The SDG2030 define seventeen clusters of goals, to which all countries have committed themselves. Four of the SDG2030 are directly relevant to the topic of this thesis, because they appear frequently in the profiles of co-housing initiatives (see below):

- Goal 5: Achieve gender equality and empower all women and girls
- Goal 7: Access to affordable, reliable, sustainable and modern energy for all
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12: Ensure sustainable consumption and production patterns
- Goal 13: Take urgent action to combat climate change and its impacts

National governments are now the first agents to bring the global agenda to local action. A political framework for urbanism is provided by the European Spatial Development Perspective [ESDP], that was informally agreed by the Council of Ministers responsible for Spatial Planning in 1999. Urban designers and planners have addressed the new challenges and attempt to unite the three (PPP) domains, to create vital, affordable, accessible and low-impact (less resource intensive) living areas both in new and existing urban areas. One example is the New Charter of Athens, The European Council of Town Planners' Vision for Cities in the 21st Century [2003[22],] which reverses the CIAM principle of zoning the city into a remix of work, leisure and everyday life [Tummers and Zibell, 2012].

Further recent attempts to implementation are the New Urban Agenda initiative by UN Habitat 2015 and advanced in the EU by the Dutch presidency[23]. Both the UN habitat 'New Urban Agenda' (NUA)[24] and the EU strategic development goals (SDG2030) are concerned with climate change, social inclusion and fair distribution of wealth. However, the Institutional answers to the triple crises are slow to be disseminated and implemented. There is no linear process that passes on the COP21 signatures to the national, regional and local private and public actors who then act accordingly. On the contrary: sectorial boundaries prove hard to overcome, and the systems in which these actors operate can contain restrictive or inhibitory elements. It takes time to adapt such systems to new regimes, if only to safeguard democratic procedures and check the impact on vulnerable groups.

22 ECTP (2003) The New Charter of Athens 2003,. Available at www. ceu-ectp.org/index.php?option=com_content& view=article&id=85&Itemid=118.

23 https://ec.europa.eu/europeaid/policies/european-development-policy/2030-agenda-sustainable-development_en last visited 17 January 2017

24 https://habitat3.org/the-new-urban-agenda/ last visited 17 January 2017

§ 3.3 Grass-root response: local action

Local practices can change on a shorter notice than institutional transformation, and local initiatives experiment with new solutions to the triple crisis in a parallel movement. In everyday reality, the accumulating effects of these crises continue to weigh hard on individuals and households who are increasingly required to face problems such as shortage of affordable housing, risks of flooding, poverty and isolation. A myriad of social charity and solidarity networks try to counterbalance these effects, and shape the grass-roots movements' answers to the triple crisis [Thackara, 2015; Hawken, 2007]. In this movement, new paradigms emerge based on core values such as "*stewardship and health, in place of extraction and decay*."[25]. Part of these actions belongs to established networks such as religious organisations, trade-unions or rural associations. Another part takes place in new networks, known as 'slow' 'alter-globalization' or 'transition' movements, operating on a set of key-values inherited from civil and feminist movements of the 1970s. Co-housing is seen as part of this wider civil movement of self-organization that also includes, amongst others, urban agriculture, energy-coops and self-employment [Uitermark, 2015; Lans and Hilhorst, 2013].

In the new movements, people, planet and prosperity are again seen as interdependent and requiring integrated approaches and solutions [figure 3.3]. They build on a version of the pillars of sustainability that interprets:

- '*People*' as citizenship; inclusive, accessible and with equal rights for participants
- '*Profit*' as we-conomy'; a value-driven instead of monetary profit driven economy; based on mutualisation
- '*Planet*' as responsible use of resources, leaving sufficient living conditions for the next generation

Core values such as respecting civil rights and diversity, eco-systems and environmental systems, guide the implementation of local alternatives. With the aim to reduce dependency on the large and un-transparent industries and public institutions, business models are developed that prioritise human values over monetary value. Technologies are made to include recycling materials, water and energy. Local initiatives vary in the 'package' of alternatives that is implemented, some prioritizing the environmental aspects, others the financial or social accessibility, and so on. This common agenda is particularly visible in the aim to move from fossil-based to renewable energy-systems.

25 http://thackara.com/thackarathrive/ [accessed 2-10-2016]

In this thesis, the (wide) 'climate change problematic' is illustrated with the more specific energy-related measures taken in residential environments (figure 3.4). The remainder of this chapter defines the boundaries of this study, in relation to the global background. In doing so, it also contains an update of the literature review in the following chapter 3, which was originally performed in 2012-2014.

FIGURE 3.3 How co-housing as integrated practice translates the 'People Planet Prosperity' triangle

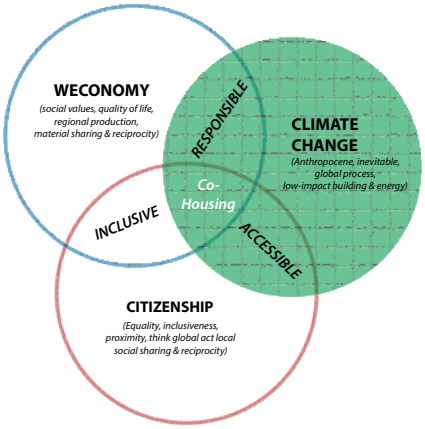

FIGURE 3.4 Positioning the field of study for this thesis in the PPP triangle

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§ 3.4 Co-housing in European perspective

Recognising that the 'triple crisis' have different impact on households in the global south and the global north, this study addresses housing in countries of affluence; the European continent. It collects experiences primarily from the Netherlands, France, Germany, and the UK, and less systematic from Belgium, Spain, Austria and Switzerland, to create a comparative perspective. Cultural-historical conditions in the former communist states are very different and these serve only occasionally as point of reference.

In Western and central Europe, until the early 21st century, co-housing projects, as Field points out: "have been proceeding almost 'under the radar'." His study indicates

that in the UK to date there has been no "publically-recognisable route for other local interests" [Field, 2015]. However, the interest of local authorities, professionals and academics is increasing. After decades of privatisation policies, enhanced by the recent crises, the concept of the state as provider is abandoned and the possibility desirability for co-housing to become an established way of housing provision, between individual self-building and institutional or market supply, has become a reality in several countries. Municipalities offer supportive infrastructure and countries adapt the legal framework to include individual or collaborative 'self-commissioning' [Denèfle, 2016; Kramer & Kuhn, 2009]. In Germany, France and the Netherlands, connections to formal policies or strategies are developing rapidly [Bresson and Tummers, 2014]. Notably in France and Belgium co-housing federations have recently successfully proposed modifications in policies and legislation.

The expectations of both policy-makers and officials towards co-housing are high. For example: co-housing is seen as a way to respond to the 'aging society' against solitude [Brenton, 2013] with intergenerational support replacing public services [Spellerberg and Gerhard, 2014]. Planning authorities integrate co-housing in urban development and regeneration as a way to foster resilience and social cohesion and social policies [Fromm, 2012; Parasote, 2011]. They are seen as a desirable path to beat the (exploitative/speculative) market [Maury & Bernard 2009; Field, 2015; Franklin and Marsden, 2015] best practices of participation [ecoquartiers evaluation]; Architects, building or real estate professionals see regard co-housing as a remedy against urban fragmentation [Herck and De Meulder, 2010], 'villages in town' [Lietart 2012] or 'Green Urban Oasis' [Hacquebord, 2009] and the ultimate 'solution to low-carbon living' [Chatterton, 2013]. In this way, projects are upgraded to strategies addressing larger scale problematics.

Such claims need to be approached with some reservation. The literature review for this dissertation[26] (see chapter 2) found that the majority of publications turns around advocacy, both amongst researchers as well as amongst professionals and officials. In general, co-housing advocates tend to embrace the alternative set of values that spatial concepts and design criteria of co-housing arise from (inclusiveness, environmental responsibility and social diversity: see figure 3.1) too simplistically. A large number of case studies lacks critical distance and systematic data gathering [Tummers 2015b]. Recently, analyses are becoming more critical. For example, Labit [2015] cautions that solidarity should not be taken for granted. Boonstra [2015] points out that self-organisation is fundamentally different from government-initiated participation.

26 Survey of approximately 50 publications on co-housing since the year 2000, chapter 3 and published in Urban Studies 2016, Vol. 53(10) 2023–2040

With some exceptions, co-housing is primarily an option for urban households with considerable social and cultural capital [Jarvis, 2015; Droste, 2015]. Chiodelli [2015] even argues that co-housing is similar to gated communities, although Ruiu's analysis [2014] suggests that despite some points of similarity, relationships between residents are fundamentally different. Ruiu's study explains the differences between co-housing and gated communities out of the grass-roots demand-driven organisational model versus typically top-down cost-efficiency driven schemes. The literature review concluded with signalling two research gaps: the planning perspective and assessing the environmental performances of co-housing. Chapter 6[27] suggests that analysing co-housing from a planning perspective can contribute to answering the reservations outlined above. Section 3.5 gives an additional example, looking at a planning aspect that is key to the energy performance: the urban location. Section 3.6 provides an update: have the research gaps been addressed since the literature was performed?

§ 3.5 Co-housing locations

Urban co-housing initiatives are the more visible part of the recent co-housing trend. The initiatives seek the benefits of the city, such as the proximity of schools, culture, jobs and services, avoiding suburban disadvantages such as mono-functionality, isolation and car-dependency. However, some suburban qualities are brought along, such as gardens, space for children, or village-like settings for informal interaction and small-scale enterprises. On the other hand, recent Dutch initiatives under the flag of 'eco-*dorpen*' (eco-villages) combine the ideals of the 1970s 'back to nature movement' with features of 21st century 'network cities'. New communication technologies as well as flexible labour hours and shared transport are transforming the classical models of villages and urban residential areas into new, hybrid designs which are meant to combine the best of two worlds[28]. For urbanism and engineering, the choice of location is more significant than ideological features of co-housing. First, because zoning plans, infrastructure and housing market present fundamental differences for urban of rural locations. Second, because the distance to the urban metabolism, in other words the energy, waste and water grids, has a significant impact on the ecological footprint.

27 published 2015 in *Journal of Urban Research and Practice* 8, no. 1 (March): 64–78.

28 http://www.omslag.nl/wonen/ecodorpen.html last accessed October 2016. At the time of the field-study these initiatives were in a (very) rudimentary stage, for this reason they have not been selected as case-study.

Most studies however, depart from the residents' community and location is not considered essential for the definition of co-housing. Thus, eco-villages (or rural initiatives) are included in the term. An example is the survey Meijering et al [2007]. performed of almost 500 'intentional communities', from isolated religious communities to highly ecological initiatives, in rural areas. Four types of criteria were used: ideological, social, economic and locational, of which 'ideology' appears to be the determinant. Marckmann et al [2012] use the terms co-housing and eco-villages as equivalents in their assessment of the ecological performance of self-governed housing. An approach to engineering that is useful for optimizing low-impact housing clusters should, however, include spatial context. Location characteristics such as the availability of services, playgrounds and gardens, or public transport, affect the living conditions, and the priorities set for the design of co-housing ensembles. On the other hand, the impact of co-housing initiatives will be diverse according to the scale and density of its environment. The significance of co-housing models for rural areas with shrinking populations is a newly developing area of study. Wankiewicz discusses several cases in Austria to find a positive response to maintaining everyday services [Wankiewizc, 2015], whereas Spellerberg found resistance from local authorities in rural areas of southern Germany against self-organised housing initiatives [Spellerberg, 2014].

For the reasons outlined above, this thesis does not include eco-villages or village renewal strategies. Instead, it draws on a (sub-)urban context with direct connections to infrastructure for the urban metabolism, such as sewerage, drinking water supply, electricity and data grids, roads and public transport, as well as access to urban services such as education, health and culture.

§ 3.6 Update of the literature review

Since the publication of the literature review (chapter 2), the growing number of conference papers indicates that the interest in co-housing continues to rise. The growing community of scholars involves a more critical discussion of co-housing, some of which have been published in a thematic issue of Urban Research and Practice [Tummers 2015a]. Two key reports have been published reflecting on the state of the art in the co-housing field: "Shared Futures" for the UK [Jarvis et al, 2016] and

"Co-housing and social mix"[29] for France [Labit and Bresson, 2017]. The French study focusses on accessibility and social mix in and through co-housing, and begins to fill one of the empirical gaps, notably that of the residents' socio-economic profiles related to self-organisation. Unfortunately, the report does not include a gender-analyses, although this would be relevant, seeing that the income divide between genders is still considerable. Neither does it include a perspective on energy and other resources used in housing, which also influence the bills and hence affordability. The 'Shared Futures' report proposes cohousing as a solution for the dysfunctional UK housing market. Amongst its key-findings it postulates:

*"Cohousing communities **often** perform better in economic and ecological terms than conventional speculative owner-occupied housing. These communities **can be** more affordable because facilities and resources are shared. They **can** reduce energy demand, waste and consumption by supporting sustainable practices." [2016: 6, emphasis added]*

The cautious wording indicates that the economic and ecological potential is not necessarily understood or used, and the report recommends these need to be further understood. The report addresses public authorities with recommendations to advance co-housing practice in the UK.

Neither of the reports thus fills the research gaps, but together with the overlap in institutional and grass-root sustainability agendas as described in this chapter, they suggest that the interaction between local authorities and co-housing initiatives is far from being established, and a key-issue to develop co-housing as inclusive housing solution.

§ 3.7 Conclusions: interaction between institutional and grass-root actors

In the transition towards sustainable urban development, as Franklin & Marsden [2015] point out, despite the common agenda, the actions of grass-root initiatives and local governments are often not well-concerted and therefore less effective. The authors argue that if grass-root initiatives and local authorities (especially the

29 Original title: L'habitat Participatif Face Au Defi De La Mixite Sociale study commissioned by Fondation de France

executive departments such as spatial planning) work together more closely, this would lead to real mobilisation 'to achieve the ambitious and aggregated environmental targets' [Franklin and Marsden, 2015:954]. This possible interaction between co-housing initiatives and institutional environment is illustrated in figure 3.5.

In practice both grass-root initiatives and municipal departments are fragmented, and sectoral priorities differ even within one town or region. Purtik et al [2016], found that "*there is surprisingly little research on how cooperatives innovate and collaborate with inside and outside actors in this context*" [Purtik et al, 2016:112]. Droste [2015] argues that a municipal framework is needed for co- housing initiatives risk becoming socially inclusive rather than defensive, introverted and elitist. Planning conditions can steer the design towards either an open and lively semi-public 'urban oasis' or defensive, exclusive 'urban island'.

This study therefor discusses key design characteristics of co-housing projects in their institutional context. It especially looks at how the sustainability agenda translates in design criteria and how their implementation may be supported or obstructed by regime forces.

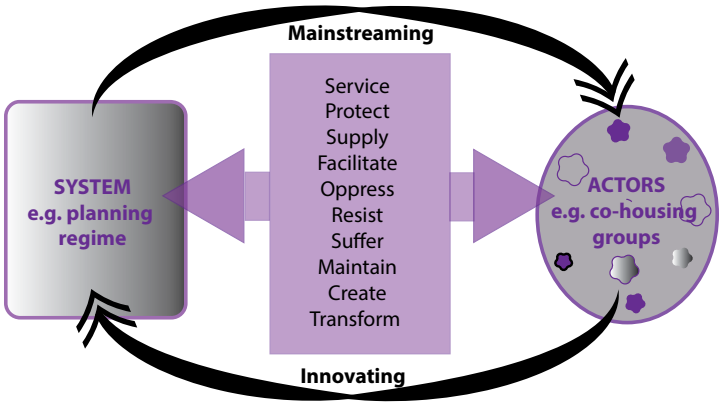

FIGURE 3.5 Permanenr interaction system-actor or institutional environment and grass-root initiative

References Background

Blokland T, Hentschel C, Holm A, et al. (2015) Urban Citizenship And Right To The City: The Fragmentation Of Claims. *International Journal Of Urban And Regional Research* (proceedings of symposium @ Humboldt U. Berlin): 655–666.

Boonstra B (2015) Planning Strategies in an Age of Active Citizenship : A Post-structuralist Agenda for Self-organization in Spatial Planning. Utrecht: In Planning. Available from: http://dspace.library.uu.nl/handle/1874/322810 (accessed 20 July 2016).

Brenton M (2013) *Senior cohousing communities – an alternative approach for the UK?* London: Joseph Rowntree FOundation. Available from: (http://www.jrf.org.uk/work/workarea/better-life).

Bresson, Sabrina, and Sylvette Denefle. (2015): "Diversity of Self-Managed Cohousing Initiatives in France." *Journal of Urban Research and Practice* 8, no. 1 (March 5–16.

Bresson S and Tummers L (2014) L'habitat participatif autogéré en Europe : vers des politiques alternatives de production de logements ? *Metropoles* Politiques alternatives de développement urbain(15). Available from: http://metropoles.revues.org/4622 (accessed 23 January 2015).

Campbell S (1996) Green Cities, Growing Cities, Just Cities?: Urban Planning and the Contradictions of Sustainable Development. *Journal of the American Planning Association* 62(3): 296–312.

Chatterton, Paul (2013): "Towards an Agenda for Post-Carbon Cities: Lessons from Lilac, the UK's First Ecological, Affordable Cohousing Community." *International Journal of Urban and Regional Research* 37, no. 5 1654–74. doi:10.1111/1468-2427.12009.

Chiodelli, Francesco, and Valeria Baglione (2014):. "Living Together Privately: For a Cautious Reading of Cohousing." *Urban Research & Practice* 7, no. 1 (January 2, 20–34. doi:10.1080/17535069.2013.827905.

Chiodelli, Francesco. (2010): "'Enclaves' Private A Carattere Residenziale: Il Caso Di Co-Housing." *Rassegna Italiana Di Sociologia* 51, no. 1 95–116.

Denefle S (ed.) (2016) *Repenser la propriété Des alternatives pour habiter*. <essais>, Rennes: Presses universitaires de Rennes.

Droste C (2015) German co-housing: an opportunity for municipalities to foster socially inclusive urban development? *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 79–92.

Elkington J (2008, original 1998) Enter the Triple Bottom Line. In: Russo, M (ed) *Environmental Management: Readings and Cases* London/New York: Sage: 49-66

Field M (2015) 'What strategies are integrating "community-led housing" into the English mainstream? - are "alternatives" to conventional supply apparent within contemporary housing and planning proposals'. *proposed for IJHS*.

Franklin A and Marsden T (2015) (Dis)connected communities and sustainable place-making. *Local Environment* 20(8): 940–956.

Hacquebord, Jeanet 2009. "Duurzame stadsoases, functioneel, financieel, ecologisch en sociaal in balans." Wooninnovatiereeks. Arko Uitgeverij BV: ZI Onderzoek

Hawken P (2007) *Blessed Unrest: : How the Largest Movement in the World Came into Being and Why No One Saw It Coming*. New York: Viking Press. Available from: http://www.blessedunrest.com/ (accessed 11 August 2016).

Herck, Karina Van, and Bruno De Meulder, eds. *Wonen in Meervoud. Groepswoningbouw in Vlaanderen 2000-2010*. Amsterdam: SUN Architecture, 2010.

Isaksen LW, Devi SU and Hochschild AR (2008) Global Care Crisis: A Problem of Capital, Care Chain, or Commons? *American Behavioral Scientist* 52(3): 405–425.

Jarvis helen (2015) Community-led Housing and 'Slow' Opposition to Corporate Development: Citizen Participation as Common Ground? *Geography Compass* 9(4): 202–213.

Krämer S and Kuhn G (2009) *Städte und Baugemeinschaften*. Stuttgart + Zürich: Karl Krämer Verlag. Available from: wuestenrot-stiftung.de.

Labit, Anne (2015). "Self-Managed Co-Housing in the Context of an Ageing Population in Europe." *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 32–45.

Lans J van der and Hilhorst P (2013) *Sociaal doe-het-zelven. De idealen en de politieke praktijk*. Amsterdam: AtlasContact. Available from: http://www.josvdlans.nl/journalist/boekdetails.asp?BoekNr=51 (accessed 26 February 2014).

Lietart M (2012) *Le cohabitat. Reconstruisons des villages en ville!* Brussels: Editions Couleur Livres aslb.

Locatelli D, Desrues F and Biry J-M (eds) (2011) *Guide Pratique de l'Auto-promotion*. Strasbourg: Association Eco-Quartier Strasbourg et CAUE Bas-Rhin.
Maldonado E (ed.) (2013) *Implementing the Energy Performing Buildings Directive (EPBD)-Featuring Country reports 2012*. Concerted Action Energy Performance of Buildings, Porto. Available from: www.epbd-ca.eu (accessed 18 August 2014).
Maury Y and Bernard N (eds) (2009) *Les cooperatives d'habitants: une troisieme voix pour le logement?* Bruxelles: editions Bruylant.
Nieboer N and Gruis V (2016) The continued retreat of non-profit housing providers in the Netherlands. *Journal of Housing and the Built Environment* 31(2): 277–295.
Ruiu M (2014) Differences between Cohousing and Gated Communities. A Literature Review*. *Sociological Inquiry,* 84(2): 316–335.
Sassen S (2002) Women's Burden: Counter-geographies of Globalization and the Feminization of Survival. *Journal of International Law* 71(2): 255–274.
Spellerberg A and Gerhards P (2014) Cooperatives and Co-housing of older people. German Case Studies in Rhine-land-Palatinate. In: *From Control to Cocreation*, Utrecht/Delft. Available from: http://www.aesop2014.eu/.
Thackara (2015) *How to thrive in the next economy*. Thames && Hudson. Available from: http://thackara.com/thackarathrive/ (accessed 2 November 2016).
Tummers L and Zibell B (2012) What can planners do for the connected city? A gendered reading of the New Charter of Athens. *Built Environment* 38(4): 524–539.
Tummers, L. (2015). "Understanding Co-Housing from A Planning Perspective: Why And How?" *Journal of Urban Research and Practice* 8, no. 1 (March): 64–78.
Tummers, Lidewij, ed. (2015a) *The Re-Emergence of Co-Housing in Europe*. London/New York: Routledge.
Tummers L (2016) The Re-emergence of Self-managed Co-housing in Europe A Critical Review of Co-housing Research. *Urban Studies*: Vol. 53(10): 2023–2040
Uitermark J (2015) Longing for Wikitopia: The study and politics of self-organisation. *Urban Studies* 52(13): 2301–2312.
UNWCED (1987) *Our Common Future. Report of the World Commission on Environment and Development*. (the Brundlandt report) United Nations. Available from: http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf (accessed 2 July 2014).

4 Dutch context

Self-organisation facing housing and energy-policies

Introduction

The following chapter summarises three decades of Dutch policies related to housing and to energy, as a background to the 'alternative' production of co-housing. The overview focusses on relevant factors and the socio-economic trends that led to the re-emergence of civil initiative addressing sustainability issues and energy transition in particular. It shows that the exogenous planning conditions for co-housing do not only come from planning departments. For example, environment-related policies within other ministries other income-related housing measures may affect the co-housing practice. In the Netherlands for example, energy-policies are specifically linked to the Ministry of Economy (MinEZ). Since the dissolving of the Ministry of Housing, MinEZ is also responsible for self-developed housing.
The combined findings are clustered in periods that frame the selection of projects of the field-study for comparison (Table 4.1).

§ 4.1 Sustainability Policies in the Netherlands

§ 4.1.1 Growing national awareness

Since the first 'oil crisis' of 1972 and reports of the Club of Rome [Meadows et al. 1972] the Netherlands has developed environmental policies. The global 'oil-crisis' brought attention to energy consumption of housing, and the focus lies on energy saving measures. Union protests and strikes against high unemployment, high interest rates and urban squatters-movement express civil engagement in the Netherlands[30].

30 This period is left out of consideration in this thesis to keep the study within feasible boundaries.

TEXTBOX 1

CLIMATE CONDITIONS IN THE NETHERLANDS

The Netherlands has a relatively mild maritime climate with a mean temperature of 10oC. The average maximum temperature is around 23oC (summer) and the average minimum temperature at -2oC (winter). The predominant construction method for houses is an in-situ concrete structure with brick outer walls and a sloped roof for terraced housing and a prefab concrete structure for apartments. The comfort standard in housing is high: design temperature for dwellings is kept at 21oC, and ventilation rate are advised at 50 m3/hr per capita.

After the UN Committee on Environment and Development's report introduced the term of 'sustainable development' [Brundlandt, 1987], the Dutch government issued a national environmental exploration [RIVM 1988] and a national environmental policy plan [VROM 1989, the first in the world]. A year later, the term of 'sustainable construction' was introduced addressing specifically the building industry [Ministerie van VROM 1990]. Handbooks were issued in the 1990s, such as 'DCBA method' for classifying materials and environmental measures [Duijvestein 1997] and the 'National Package Sustainable Urbanism' [SEV, 1999; Bueren, 2009]. Despite accessible knowledge and advantageous fiscal regulations, the market remained reluctant until around 2007, and instruments for energy-reduction and sustainable building were more of 'stimulating' than of enforcing and sanctioning nature. For example, financial incentives were given for LCAs (Life Cycle Assessments) or knowledge development. Both came together in calculation models such as GreenCalc, or in multi-criteria models for certification such as BREEAM. A certain score could give access to green loans. During the 1990s the Dutch government subsidised experiments of sustainable building [SEV, 2001]. This has produced interesting results, and several co-housing initiatives have benefited from the subsidies to realise their ambitions (see section four). This research found that co-housing projects were proportionally over-represented in such programmes (see chapter 5) which underlines the relevance of studying co-housing in the light of climate change and energy targets.

In 1996, the '*Energieprestatienormering*' (EPN, national energy performance code) became mandatory and calculation software was introduced for all new buildings. Since, an energy performance (EP) calculation has been mandatory to obtain a building licence. At its introduction, the maximum energy performance coefficient (EPC) for dwellings was set at 1.6, presently (2015) an EPC of 0.4 is the maximum allowed.

For the calculation of the EPC, certified advisors are required. Despite these efforts, between 2000-2010 the average energy consumption of dwellings was reduced only by 1% per year (*energiemonitor* 2012). The strategy of subsidies has largely been abandoned by the national government, whereas municipalities more often stimulate and support the transition to sustainability [e.g. Tillie at al., 2009; Bueren, 2012].

Aware of the greatest challenge lying in the housing stock, in 2008 three covenants on energy-reduction in the built environment were formulated between the national government and building market sector:

- Introduction of the energy certificate. The average score of Dutch houses is estimated at label C-D [RVO 2015], based on estimates that were informed by year of construction and the energy standards in force at that time.
- Application of normative energy performance also on renovation, leading to a legal framework.
- Enforcement of energy-neutral construction as of 2020, following EU energy policies (Ordinance 2002/91/EG).

TEXTBOX 2

NATURAL GAS AND OTHER RESOURCES

The Netherlands is one of Europe's largest gas producers and 98% of the residential park is connected to the gas grid. Being a small and densely populated country, the Netherlands is doted with a dense grid for electricity and natural gas. About half of the gas resources go into the heating of buildings [CBS 2014]. The main source for residential heating is natural gas, since its introduction by law in 1963. This national fuel and tax resource has dominated state policies as well as bought considerable public revenues [regulated in the Mining Act]. Electricity is also produced primarily through the incineration of gas, with coal, waste and biomass in addition. Nuclear power is imported from France and Belgium, and hydro-power from Norway. Windmills are historically linked to the drainage of land below sea-level (western and northern parts of the Netherlands), but modern wind turbines for power production are subject to spatial policies that privilege off-shore parks since 2013 [EIA 2014]. The Structural Vision for Onshore wind parks 2014 has stimulated private initiative as well as provoked criticism at local level [Ministry IM, 2014; Dabrovski 2016]. Recently, it has become clear that gas-winning is causing earthquakes in the Northern provinces and the present minister has put a limit to yearly production of natural gas [EIA 2014]. This started a debate on 'all electric' as a mandatory concept for all new construction.

§ 4.1.2 The heated debate around natural gas

Meanwhile, since 2005, Dutch national policies have prioritized the creation of a 'gas hub', importing and trading rather than replacing the national gas as such (estimated to be exhausted by 2030) [Stuiveling & van Scholten 2012]. This affected the technological development in renewable energy sector, and citizens with environmental concerns began resisting the dependence on (primarily Russian) gas and other energy imports. Implementing local alternatives (notably PV-based) the potential of off-grid alternatives became a challenge to the highly centralised energy-supply and opened a debate around decentralised networks. In 2012 the then elected Dutch government coalition set the overall long-term objective to create a sustainable, reliable and affordable energy system by 2050, reducing CO_2 emissions by half [*Bruggen slaan* 2012]. This meant that the Netherlands were last in line to meet the Kyoto targets and the SDG2030, which caused unrest and brought NGO's to intensify environmental actions.

The fierce debate around the strategies for energy-transition triggered the Social Economic Board (SER) into initiating a society-wide process to reach an 'Energy Agreement' [SER 2013]. In 2013 consensus was reached on efficiency savings to be 1.5% or 100 Petajoules (PJ) from National energy consumption by 2020 and deploying more renewable energies (14% by 2020 and 16% by 2023). The Agreement

"promotes sustainable energy at local level, network investment and a strong EU Emissions Trading Scheme. It also supports the transition to clean coal and carbon capture and storage technologies, energy savings and emissions reductions in transport, and the commercialization of clean technologies, while stimulating employment and training." [SER 2013]

These agreements with industry and civil society fit the overall Dutch policy to create extra jobs by means of energy saving in the built environment, growth of a clean-tech industry, and energy efficiency with existing energy-intensive industries[31] (SER 2013). The agreements were followed by national innovation programmes such as '*Energiesprong*' (energy leap), that addresses energy-retrofitting the housing stock by creating critical mass through information exchange and social media for investments in the private building stock and change of behaviour. One example is the '*Stroomversnelling*' (renovation rapid) green deal, a consortium of private parties from the building industry that, supervised and supported by the ministry, will renovate

31 In 2011 the total employment in the area of energy saving and renewable energy was 19,000 [Zult et al. 2013].

111,000 (one-hundred eleven-thousand) dwellings to 'zero on the meter' [Zero energy bill, see Rovers, 2014], which triggered the earlier mentioned debate on 'all electric' housing. The 2016 Dutch Minister of Economic Affairs considered energy savings, use of waste heat and renewable energy as the three main options to achieve climate goals. Parallel to the building innovation programmes, a grid innovation experiment was conducted between 2012-2015. According to the project partners, the 'smart grid' technology is now ready for scaling up [RVO 2015].

§ 4.1.3 Bottom of the global list

So far, the combination of energy transition and economic boost has not been very successful [CPB/PBL 2014:64]. At present, most of the older Dutch housing stock does not comply with modern energy standards; especially pre-1990s housing has considerable 'energy leaks' (see also chapter 9). Housing associations are slow to invest because of the so-called 'split incentive': they do not benefit financially from energy-saving. Private households are not capable either of investments or of collective action. Municipalities do not own housing projects and can only stimulate by means of local incentives.

Both at the level of the individual building and the networks (grids), the abundant availability of natural gas diminished the sense of urgency regarding the transition toward renewable sources. Renewable sources only form four percent of the national energy mix of electricity [EEA 2015], placing the country second to last in Europe, and the target of carbon emission reductions by 2020 was reduced from 20% to 14% in the 2015 national policy. The national bureaux for statistics (CBS) and for the environment (PBL) signal that:

'At macro-level, the Netherlands is far behind European countries in the transition towards renewable energies, but this may change with the emergence of bottom-up initiatives. Solar collectors and policies have enabled people with environmental concerns to actively contribute to the solutions. The question now remains if this enthusiasm can be channelled towards other technologies. (...) Some energy innovations, such as double glazing, insulation and highly efficient boilers, have reached the 'late majority. Solar technology has reached the 'early majority'. However, energy-neutral dwellings are still a privilege for a small group of 'early adopters'" [CPB/PBL 2014:49 authors' translation].

As a result, the pressure of civil society is rising[32]. According to the latest survey, more than 400 local civil initiatives to accelerate energy transition have appeared [Elzinga and Schwenke, 2014]. Several co-housing projects explicitly identify with or participate in new energy coops, but not all initiatives have similar ambitions. The pioneering groups point the way to the opportunities for energy efficiency and renewable sources that clustered, self-managed housing holds, given the proper conditions. Section 4.3 elaborates on this movement.

§ 4.2 Dutch housing provision

§ 4.2.1 Institutional housing provision

Post-world war II Dutch housing provision was based on institutional, large-scale, housing associations and the private developer turn-key market [Ouwehand and van Daalen, 2002; Lans et al, 2016]. Consequently, the majority of units were rented out by housing associations (HA), considered semi-public institutions tied to a wide range of rules concerning development, maintenance, distribution and allocation. In the 1970s and 1980s, housing budgeting followed strict norms for m^2 surface and height as well as technical standards, related to subsidies, both to the institutions and as individual housing support. Although local authorities applied their own version, the V&W was taken as standard by developers and housing associations, this led to largely uniform housing plans –such as the 5x10m^2 / 2,5 storey terrace house. To escape from this rigid system, the then Minister of Housing Heerma published the memo "From building to housing" in 1989. A more flexible National Building Act (*Bouwbesluit*) was introduced in 1992 and most projects of this field-study except Romolen have been built under this act and its major revisions in 1998, 2003 and 2012[33]

32 one of the internationally published examples being the law-suit of NGO *Urgend*a against the State [Urgenda 2015]

33 http://www.bouwbesluitonline.nl/[last accessed 16 Fberuary 2017].

In 1994 all HAs were privatized during a large-scale operation that exchanged outstanding loans against pay-off of subsidies: the so-called '*Bruteringsoperatie*[34]' -2000. This was followed by a wave of merging that produced large-scale HAs who formed their own development agencies competing with commercial investors. In the same period, planning policies regulated housing following the 'compact city expansion' model (VINEX). Due to an estimated high housing demand, priority was given to fair but efficient distribution of development locations, conserving open landscape and securing connectivity to city centres [Cammen en de Klerk, 2012; Roo, 1998]. Private developers held strong positions of land with rights to buy, and few locations were opened to self-builders [Dammers et al., 2007:6]. Planning conditions were further characterized by a general guideline for 30% 'affordable' housing. The bottom line set in the building act was generally seen as standard with additional, negotiable local requirements for special groups or sustainability [Bueren, 2012]. Policies for sustainable building and energy-efficiency mainly had an experimental character, except the gradual introduction of EU-agreed energy-performance norms [Beuken, 2012].

§ 4.2.2 Promoting self-development and home-ownership

Against this background the idea of the 'participation society' [Lans and Hilhorst, 2013] as an alternative to the welfare state was introduced. Increasing the share of self-developed housing fitted this line of thinking, and in 1998, Parliament demanded the Dutch government to double the share of self-developed housing production (Particulier Opdrachtgeverschap, PO) to 30% in 2005. As a result, in 2000, parliament approved the Memorandum "*Mensen Wensen Wonen*" ('People, Preferences, Dwelling' Ministerial vision on housing in the 21st century). It proposed more influence for inhabitants on housing and the environment. The memorandum specifically mentioned the need to produce custom-made housing and more 'ecological housing', at the same time urging citizens to 'take responsibility for their environment' [Remkes and Pronk, 2000: 65-66]. A ten-year implementation program was to follow in a threefold strategy:

1. Stakeholders agreements (notably HA and local authorities)
2. Adjustment of the legal framework
3. Development of new instruments and experiments.

34 *Wet balansverkorting geldelijke steun volkshuisvesting* [Housing deleveraging Act] 31 May 1995 http://wetten.overheid.nl/BWBR0007419/2008-06-13/0/ (accessed 26 June 2016)

In 2005 national statistics showed CPO still represented only about 15% of building licenses, i.e. between 9,000 and 10,000 units/year (CBS 2014). This was assumed to be due to lack of demand, as well as of available plots. Surprisingly, research commissioned by the (then) Ministry of Housing, Spatial Planning and Environment ('VROM') revealed that the low share of self-developed housing is due to the Dutch planning culture, based upon collaboration between professional parties without structural involvement of end-users [SEV 2006]. The conventional planning structures first slowed down self-development in some municipalities, but since the publication of the report, significant change took place: chapter 7 reports further details of these changes. The SEV-research further showed that the attitude of municipal Aldermen (M/F) responsible for housing and urban development was a decisive factor. For example: Alderman (now senator) Duivesteijn was a key-actor in transforming the planning department of Almere [Tellinga, 2012]. VROM lowered the CPO targets in 2006 but at the same time intensifies its appeal to municipalities: "*the human factor has disappeared and housing production has become uniform, allowing too little room for choice*[35]" [VROM 2005:4, authors' translation]. The Ministry also recognised that "*Collective building does fit Dutch planning culture because it is based on serial production*" rather than individual (semi-) detached houses. In this quote 'collective' does not mean 'run by a resident collective' but refers to clustered housing (primarily apartment buildings). To accelerate the adaptation of local planning structures for self-procurement, the ministry issued a 'handbook' and allocated €42.5 million to subsidise municipalities that performed well on self-development. For this thesis especially relevant is the dissolving of the Dutch Ministry of VROM in 2010 after its executive departments had already been outplaced to a semi-public agency SenterNovem[36]. Housing became the responsibility of the Ministry of Internal Affairs, which installed a 'Self-building Expert team' (NET-self-building) to assist municipalities in their working with citizens in development[37]. In 2015, the team launched a course for officials from Municipal planning departments to introduce the new ways of working.

35 "*de factor mens is uit het bouwproces verdwenen. De laatste jaren groeit de kritiek op de eenvormingheid en het gebrek aan keuzevrijheid die met deze manier van bouwen samenhangen*" (authors translation of original text)

36 nowadays part of the *Rijksdienst voor Ondernemend Nederland* (National Service for Dutch Enterpreneurs)

37 http://www.rvo.nl/onderwerpen/duurzaam-ondernemen/gebouwen/woningbouw/nieuwbouw/eigenbouw/expertteam-eigenbouw (accessed 12 September 2015)

§ 4.3 The rise of civil initiative

When the real estate sector collapsed as a consequence of the financial crisis, in the Netherlands the investments in housing virtually came to a halt [Koning & Mulder, 2012]. This crisis gave rise to civil initiatives, in all fields: housing, urban agriculture, health care, business, energy-coops and eco-villages. Home-owners found themselves with little room for investment and the housing market became inaccessible for starters. This stagnation together with the housing and energy (privatisation) policies outlined above induced self-organisation in the Netherlands.

While residents are taking initiative because they perceive government or market as being too slow; on the other hand, government perceives a lack of support from the general public for the measures it seeks to implement. However, recent studies of the statistics (CBS) and environmental research (PBL) agents of the government have reached new insights on bottom-up projects. Most of the grass-root initiatives identify as energy cooperatives, but, according to the study, a large part of the population is not involved in energy-transition [CPB/PBL 2014:50]. According to the report, a study of *Motivaction* (2013) concluded that a quarter of the respondents was not prepared to self-produce solar energy. The study speculates on the motives of this refusal: it may be lack of awareness, but also lack of available roof-space or finance. Also, the general impression has long been fed with the idea that solar energy is expensive and unfeasible. The majority of people may be interested in applying new energy technology, when the impact becomes easily visible (in terms of reduced bills or other). CBS and PBL advise to connect the technological innovations to local initiatives already engaged in environmental or social concerns. This is however a late insight: our case-studies show that already thirty years ago co-housing initiatives have found their way to governmental programmes and market-innovations as energy-pioneers. Chapter 7 outlines the history of co-housing in the Netherlands.

§ 4.4 Context clusters for comparison

In the present (2015) situation of the Netherlands, several trends are converging: after a period of disinterest and stagnation, the building industry has renewed interest in energy-efficiency and renewable energies. The preliminary energy-labels (average C-D) indicate there is room for improvement in the housing stock. Civil initiatives of all sorts are addressing energy transition, from investing in wind-turbines to speaking out against coal-fired power plants. Finally, there is more pressure on government to accelerate energy transition, both from civil initiatives, the energy suppliers and

network managers themselves, and top-down directives (EU; COP). New technologies for smart grids and home-engineering, as well as connecting to transport using electrical cars for energy-storage are emerged.

Overlooking the policies, four periods of energy/sustainability approaches characterize the Dutch context can be identified:

- 1985-1995: the *introduction* of concepts of sustainability and the need for reduction of CO_2 and fossil fuel
- 1996-2006: development and dissemination of *instruments* such as LCA, EP, financial incentives, handbooks
- 2007-2012: *stagnation*, due to lack of investment capacity and economic priorities of new coalition
- 2013-date: renewed sense of urgency, due to societal pressure. A new interest in the lessons learned from civil initiatives.

Table 4.1 gives an overview of the policy periods outlined above. It indicates some turning points and gives examples of housing projects that have been fore-runners in the development of technology and legislation in the context of Dutch energy policies.

Co-housing projects have been on the crossroads of these trends, at the same time *opposing* National energy policies and *making use* of legal and financial instruments to experiment with energy-transition in housing. Chapter 7 places residents' (co-housing) initiatives next to institutionalised pilot projects, to identify the specific opportunities and bottlenecks to optimise the projects' energy performance.

TABLE 4.1:	DUTCH CONTEXT TIME-CLUSTERS	ENERGY STANDARD IN HOUSING	TOP-DOWN EXPERIMENTAL PROJECTS	SELF-MANAGED CO-HOUSING & ENERGY PROJECTS
1945-1985: reconstruction & industrialization				
1963	Post-war housing shortage and reconstruction	Discovery of natural gas reserve North L	Gas-supply for every household	Feminist and students' movements
1972	Oil Crisis	Emphasis on energy saving	Home insulation subsidy	*Kleine Aarde*, squatting
1985-1995: INTRODUCTION				
1989	First environmental policies & standards		Ecolonia (1988-1992, Alphen a/d Rijn)	Romolenpolder, Haarlem (1989)
1992	Introduction new Building Act (*Bouwbesluit*)	Double glazing & some insulation; flexibility		Groene Dak, Utrecht (1993)
1994-1999	*Brutering* (semi-) privatization of HA			
1996-2006: INSTRUMENTALISATION				
1996	Intro EPC	EPC≤ 1,6		
1999-2012	National Packages Sustainable Construction	1998 EP 1,6 > 1,4	Oikos (1997-2005, Enschede)	Groene Marke, Zutphen (1996)
1996-1999	SEV stimulation & demonstration program			Bongerd, Zwolle (1997)
2000	National Self-building policy	EPC 1,4>1,0		Kersentuin, Utrecht (2003)
2006-2012: STAGNATION				
2008	intro E-label & triple convenant	Average label D-E		Terbregse, Rotterdam (2001)
	Financial crisis,	Adjustments of feed-in tariffs;	building sector paralysed, overall (C)PO share remains at ±15%	Buitenkans, Almere (2007)
2012	SBR DuBo catalogus (replacing Nationaal Pakket)	EP 1,0>0,4		Meanderhof, Zwolle (2008)
2013-date: RE-EMERGENCE				
2014	National Energy Agreement	Preliminary energy labels	'*Postcoderoos*' enables energy-production at post-code radius	favourable for coho
2014	Warmtewet (Law on Heat supply)	District heating	Smart grid pilot	Kleinverbruiker ≤ 100kW; levering vergunningvrij max 10 hh
2013	*Energie-sprong* Energy-leap national program	Lowering of EP standard delayed to recover from crisis	'*Stroomversnelling*' (renovation rapid) *pilot projects*	IEWAN, Lent (2015)
2015	First time limitation on natural gas production; COP targets	New model for EP calculation (NEN 7120)	*Stroomversnelling* stagnates in govmt procedures	Urgenda wins lawsuit targets Eco-villages become partners w. authorities

TABLE 4.1 Table 4.1 Overview of Housing and Environmental regimes that define the different 'generations' of co-housing in the Netherlands.

TOC

References Dutch Context

Bruggen slaan: regeerakkoord PvdA en VVD, 2012

Beuken R (2013) Country report NL. In: Maldonado E (ed.), *Implementing the Energy Performance of Buildings Directive (EPBD) - Featuring Country Reports 2012*, Paneuropean: CA-EPBD, pp. 279–286. Available from: http://www.epbd-ca.eu/archives/669 (accessed 24 March 2016).

Brundlandt, Gro. "Our Common Future. Report of the World Commission on Environment and Development." United Nations, 1987. http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf.

Bueren EM van, Bohemen H van, Itard L, et al. (eds) (2012) *Sustainable Urban Environments: An Ecosystem Approach*. Dordrecht Heidelberg London New York: Springer.

Bueren, Ellen van. "Greening Governance: An Evolutionary Approach to Policy Making for a Sustainable Built Environment." University of Technology, department TBM, 2009. http://repository.tudelft.nl/search/ir/?q=subject:%22CT03.56.61%22.

Buis H (ed.) (2000) *Duurzaam bouwen een kwestie van willen en weten. Voorbeeldprojecten duurzaam en energiezuinig bouwen*. Utrecht: Nationaal DuBo Centrum.

Cammen H van der and Klerk L de (2012) *The Selfmade Land. Culture and evolution of urban and regional planning in*
the Netherlands. 1st ed. Houten - Antwerpen: Uitgeverij Unieboek | Het SPectrum BV.

CPB, PBL & SCP, 2014"Monitor Duurzaam Nederland 2014: Verkenning. Uitdagingen voor adaptief energie-innovatiebeleid.". www.pbl.nl of *www.cpb.nl*

Duivesteijn A and Wal, van der H (1994) *The hidden assignment / de verborgen opgave*. Rotterdam: Nai Publishers.

Elzenga H and Schwencke A (2014) *Energiecoöperaties: ambities, handelingsperspectief en interactie met gemeenten De energieke samenleving in praktijk*. Beleidsstudie, Den Haag: Planbureau voor de Leefomgeving.

Meadows, Donella H., Dennis L. Meadows, Jørgen Randers, and William W. Behrens. *The Limits to Growth*. Washingtom DC: Potomac Associates, 1972.

Koning M and Mulder M (2012) *Evaluatie Stimuleringspakket Woningbouw*. in opdracht van Min BZK, Amsterdam: Economisch Instituut voor de Bouwnijverheid. Available from: http://www.eib.nl/?s=crisis (accessed 15 January 2016).

Lans J van der, Pflug M and Beekers W (2016) *Canon Volkshuisvesting*. Vereniging Canon Sociaal Werk. Available from: http://www.canonsociaalwerk.eu/nl_vhv/details.php?cps=0&canon_id=523 (accessed 1 December 2016).

Nieboer N and Gruis V (2016) The continued retreat of non-profit housing providers in the Netherlands. *Journal of Housing and the Built Environment* 31(2): 277–295.

Ouwehand A and Daalen G van (2002) *Dutch Housing Associations. A model for social housing*. DUP satelite, Delft: Delft University Press.

Remkes J and Pronk J (2000) Mensen Wensen Wonen. Nota wonen in de 21ste eeuw. Den Haag: Ministerie VROM.

RIVM 1988

Rovers R (2014) New energy retrofit concept: 'renovation trains' for mass housing. *Building Research and Information* 42(6): 757–767.

RVO (2015) *Expertteam Eigenbouw, jaarverslag 2014*. jaarverslag, Den Haag: Min BZK; Rijksdienst voor Ondernemend Nederland.

SER (2013) The Agreement on Energy for Sustainable Growth: a policy in practice. Social and Economic Council. Available from: www.energieakkoordser.nl.

SEV (2006) "Bewoners aan zet. Vijf jaar experimenteren met particulier opdrachtgeverschap." Stuurgroep Experimenten Volkshuisvesting, mei. http://kennisbank.platform31.nl/websites/kei2011/files/KEI2003/documentatie/SEV_Advies_Bewoners_aan_zet_aug2006.pdf.

Stuiveling S and Scholten E van (2012) *Gasrotonde: nut, noodzaak en risico's Nederland als Europees knooppunt van gastransport*. Advies aan Tweede Kamer, Algemene Rekenkamer.

Tellinga J (2010) De Almeerse werkwijze. *S&RO* 91(3): 36–42.

Tillie N, Dobbelsteen A van den and Carney S (2014) Planning for the Transition to a Low-Carbon City: A New Approach. In: Lehman S (ed.), *Low Carbon Cities: Transforming Urban Systems*, London: Earthscan, pp. 173–190.

5 Co-housing design

New qualities through new housing coalitions?

Summary

This chapter explores the spatial criteria to match the co-housing ideals, and compares Dutch and Swiss co-housing practices. The Netherlands can be seen as an early pioneer of co-housing movements and Switzerland as contemporary forerunner in the field. In both countries, grass-root initiatives are increasingly recognised as important urban development partner. Co-housing advocates diversity, inclusiveness and sustainability as core values. The architectural models the initiatives have generated are highly appreciated as 'best practices' of green and accessible environments. Such results are particularly relevant for urban development in a time when cities are back in the core of development, and research as well as urban governance are facing new challenges of polarization and segregation. Cohousing thus points the way to new models of design as well as of co-creation processes.

§ 5.1 Introduction

Resident-led or collaborative housing (co-housing) initiatives have developed in Europe since the 1970s, but recently regained interest as part of a new civil movement involved in alternative production of urban space, such as urban gardening, car-sharing, or co-working. Both in the Netherlands and in Switzerland, institutional partners such as housing corporations and local authorities are beginning to see co-housing residents as valuable social capital, and promising to enhance resilience in neighbourhoods. Increasingly, co-housing initiatives are welcomed in urban development strategies [Droste, 2015; Fromm, 2012]. Co-housing initiatives often rise out of inaccessible housing markets, but in many cases the ambitions include *diversity*, *inclusiveness* and *sustainability* [Krokfors, 2012, Vestbro, 2010]. Generally they are seen as successful 'Urban Oases' 'pocket-neighbourhoods' [Chapin, 2010] or 'villages in town' [Lietart, 2009].

Despite these positive evaluations, co-housing is still a small percentage of housing stock, and the realisation of projects continues to take considerable (voluntary) time and effort. Partly this can be explained by its leaving the standard models of housing, challenging investors and builders to engage in innovative technologies and processes which confront building regulations and conventions [Tummers, 2015]. Co-housing networks exchange experiences on how to deal with specific situations, and create and disseminate knowledge for example about different contract forms, or building materials. Nevertheless, in most cases (especially urban, affordable projects) not all ambitions for co-housing design can be fully realised. In practise, only part of the proposed innovations is realised, because design decisions are also bound by building regulations and technology. For research this means that the architecture of co-housing can not be read superficially as an alternative model.

The **primary objective** of this study is to establish how ideas at the core of co-housing are expressed in spatial design, and how they differ from 'mainstream' housing and urban development.

The analyses presented here is based on architectural planning documents, project visits, interviews and collaboration with co-housing networks, supported by literature review. The selection for this chapter presents contemporary initiatives in the NL and Switzerland, which are not flagship projects in urban centres, but rather recognised 'best practices' in medium-size towns. This is done to avoid cases created under very specific conditions, and therefor singular and less promising for 'up- or outscaling'. For example, land-prices and density demands are not the same and surrounding amenities are different. For similar reasons, collective action close to co-housing such as squatting, or Community Land Trust, are not included.

The chapter first outlines the different incentives for the re-emergence of co-housing in Europe, in the context of national planning practices, and the consequent agenda's co-housing initiatives address. Then it looks at how this agenda translates in architectural design. The third section presents co-housing projects in the Netherlands and Switzerland, which are then discussed in comparison to dominant housing type and tenure; design process and building licence requirements. The conclusions reflect on the extent co-housing presents an answer to contemporary societal and environmental challenges. Recommendations are made from an architectural and technical perspective.

§ 5.2 Context: re-emergence of co-housing

Urban housing design addressing societal changes through clustered and serviced housing proposals has a long history [see for example: Hayden, 1979; Poldervaart, 2004; Coates, 2009; Gresleri, 2015]. Starting with the French Utopistes [Poldervaart, 1993]; other proposals identified as belonging to co-housing genealogy are: the Falanstère model, although the realization is more top-down than resident led [Klerk, 1980], and the one-kitchen house [Horelli and Vestbro, 2012; Sangregorio, 1995].

In its modern post-war form, several design proposals by architects and urban designers are based similar functional concepts. but not under the flag of 'co-housing'. Amongst others Le Corbusier designed clustered houses with shared services and mixed use, managed by cooperatives, in the '*Maisons Radieuses*' [Denèfle et al, 2006]. In the Netherlands, Team Ten members such as J.P. Bakema designed complexes and neighbourhoods to mediate between urban and home, or the collective and the individual. One example is ''*t Hool*', an initiative of Philips employees who created a housing coop [Putt, 2013; Schippers, 1995]. The residents are still involved in the management of the area, together with the housing association[38]. 't Hool is also an example of how contemporary housing associations which have their origin in small cooperatives (*Genossenschaften*) have changed over the decades. An important feature of co-housing initiatives is self-management, which basically implies that the organisational unit overlaps with the spatial unit [Fedrowitz/Gailing 2003]. But as this study found, the collaboration between co-housing associations and institutional housing suppliers can be especially fruitful in creating affordable as well as customised housing.

Since the so-called credit crunch (around 20o7), co-housing is back on the agenda in many European countries. After decades of privatisation policies and enhanced by the recent crises, the concept of the state as provider is abandoned in favour of the idea of self-organisation as a way of housing provision between individual self-building and institutional or market supply. In many European countries, residents take initiatives collectively to design and manage housing projects as living environments (dwellings). Depending on the historical and socio-economic conditions, there are different incentives for the re-emergence of co-housing. The table in chapter 2 (table2.1) showed how the terminology in different languages indicates where the main interest lies. For example: in booming cities, initiatives may be prompted by an inaccessible housing market. In highly commercialised or suburban areas, young families look

38 http://www.woonwijkhethool.nl [last visited 16 June 2017]

for child-friendly environments and social sharing [Kläser 2009]. For the ageing population, while care-budgets are at risk, co-housing is seen to combat isolation and care-dependency for seniors [Labit 2015]. The majority of initiatives in the 1990s started from environmental concern, looking for sustainable housing models that included a social vision. As a result, while co-housing is a pan-European phenomenon, the environmental and urban qualities of the clusters are diverse. However, the key characteristics at project/cluster scale are demand-driven rather than profit-oriented, and can be summarised as follows:

1 Co, for collaboration, collective action and co-creation. In its architectural meaning: a joined design process, to cluster the residential units, including for example a common garden, instead of individual gardens, based on different social concepts of community and solidarity.
2 Auto, in varying degrees of self-organisation; pro-active residents-involvement in order to articulate and maintain quality of living space. Includes an important amount of time and (voluntary) work in administration and maintenance, especially of common gardens and rooms.
3 Ecological, environmental awareness and more or less high ambitions for low-impact living. Co-housing initiatives are often found at the forefront of sustainable building principles, such as saving energy, recycling water and using sustainable construction materials.
4 Mixture. Both of functions and of household types. Most projects aim to include different sizes of units to accommodate a variety of households, both of life-style and income/ price level.

The architectural form of the project thus depends on the main emphasis of the group and the planning conditions. During the realisation process, the decisions on the materialization also bring forward on issues of (self-) management and affordability: the physical environment expresses the underlying social model. However, the objective of these initiatives is not architectural innovation itself, but to create housing that present a specific match of the core-values with a concept of quality of life. Municipalities can offer supportive infrastructure and countries adapt the legal framework to include individual or collaborative 'self-commissioning'. In Germany, France and the Netherlands, connections to formal policies or strategies are developing rapidly [Droste, 2015; Bresson and Tummers, 2014; Krämer & Kuhn, 2007]. Notably in France and Belgium co-housing federations have recently successfully proposed modifications in policies and legislation.

§ 5.3 Co-housing design

What does this mean for architectural and urban design? Throughout the realisation process, the overall ambition is usually first expressed in a charter and develops into a 'programme' articulated in briefings and design criteria that become more detailed at each step. This includes in the image, or identity, that projects create for themselves, and want to reflect in planning and building.

Case-studies show that the organization of the everyday is central to both the creation as well as the dissolution of housing collectives [Jarvis, 2012; 2015]. A varying amount of shared, domestic or industrial activities integrated in the projects, such as: cooking, child-care, gardening, offices, guest- and party rooms, Yoga or music courses, food-coops, clubs for special groups (seniors, ethnic, travel or cultural interest), book- or furniture exchange and so on. The provision of everyday services is an important leading principle for the design, determining the amount and arrangements of individual units and shared spaces. The projects studied present a wide range of shared activities, both for 'social' (such as cooking meals or home cinema) and 'functional' (for example gardening and maintenance) reasons, but all on voluntarily basis [Jarvis, 2011].

Several projects are based on a modular design system for cost efficiency, creating a collective basic structure and optional individual extras. This principle also allows differentiating between basic and extended units to accommodate mixed income groups. Besides homes, some offices or workshops for creative industry or care are often included. The spatial arrangements (such as tool-sheds, studios and laundries) vary accordingly, and shared spaces may be located in the build volume or as a separate 'common house'. For example, shared meals are a central feature for cohousing in the Dutch *Centraal Wonen* (CW), and Scandinavian *Kollektivhuset* model reduce the area of square meters in individual units and use these to create common living areas [Vestbro, 2010]. In strongly environmentally oriented projects, the emphasis lies on orientation to capture solar energy, and green spaces for purification and gardening. The common rooms are then equipped for educational purposes and ecological (food) consumer-coops or (bike-) storage. In both options, common spaces are operated by the residents' association.

The shared activities and mixed use requires careful orchestration of the arrangements of individual units around entrances, intermediate spaces and corridors, and location of shared spaces. This study found that the (semi-) public spaces are the main difference in the design of co-housing, individual units follow fairly standardised patterns (further discussed below). Intermediate spaces and soft boundaries are used to connect individual and common spaces; as well as securing privacy. Urban infrastructure such

as bicycle and car parking, laundry, workshops, drainage/water recycling, are often (partly) shared, as could be the case with energy and heating systems. In practice, the residential units are mostly serviced individual utilities and meters.

Figures 5.1-5.4 illustrate contemporary co-housing models in Flanders, UK, Netherlands, Germany and France, showing the common features despite different planning contexts: terrassed houses, typical shared indoor spaces and shared green, parking clustered at the periphery. The next section presents Dutch and Swiss projects in more detail.

FIGURE 5.1 Co-housing model as supported by the international cohousing movement [Source: brochure UK Cohousing Network, 2015]

FIGURE 5.2 Nieuw Terbregse.nl (Rotterdam) realized in 2001, four types of dwellings & some office space; half of courtyard is common green, the other half shared parking [source: Hulshof Architekten]

FIGURE 5.3 Typical small-town 1990s co-housing layout in Germany [Picture: Tussen Ruimte, 2014]

FIGURE 5.4 with preiphiral clustered parking and central (pedestrian) access in open green [source: Google earth]

FIGURE 5.5 Brochure of co-housing 'les Habiles', France: reflecting co-creation and conviviality as core-values.

§ 5.4 Case-studies: the lowlands and the alpine country

The scarcity of land suitable for urbanisation makes Switzerland together with the Netherlands one of the most densely developed nations in Europe, although its population (app. 8,3 million) is only half of the Dutch (app. 16,7 million)[39]. For both countries, demographic development goes towards aging and diversification of household-types, partly introduced with immigrant households. For each, there are three principal governance layers (local-regional-national) but Swiss *Kantons* have more autonomy in planning and housing issues than Dutch *Provincies*, and the Swiss Referendum to vote for major changes in federal law does not exist in the Netherlands.

39 figures 2016 source http://worldpopulationreview.com/countries/switzerland-population/

Unlike the Netherlands, which liberalised the housing market in the 1990s, Swiss housing stock has remained mostly rental, with strong rental regulation mechanisms in place. More than the Netherlands, Switzerland has a tradition of housing co-operatives, but co-housing represents around 5% in both countries. Finally, in both countries there is a tradition for pension funds to invest in housing[40]. This section briefly presents the general housing conditions for each country and a typical co-housing project.

§ 5.4.1 Netherlands

Dutch Housing provision is traditionally dominated by large-scale industrial developers and housing corporations. Although there have been housing cooperatives in the early 20th century, nowadays cooperative housing is scarce in the Netherlands. The former housing *associations* have grown into large corporate institutions, especially during the 1990s, when privatisation policies abandoned subsidized, conditional housing. Typically, developers negotiate a contract with municipalities containing a set of regulations, specifying the built volume, tenure types and infrastructural requirements. Housing regulations are centralised, and to a large extent follow EU-normatives, for example regulating the energy performance, income- and other categories of the social housing regime.

In reaction to the standardized and unsustainable housing offer of the post-war era, co-housing initiatives are emerging since the 1980s. The two most prolific branches are *Centraal Wonen* (CW or cohousing) and clustered housing for seniors (SW). Both collaborate with established housing associations (HA), who act as owners and landlords, to offer rental apartments under a social housing regime. *Centraal Wonen* is the Dutch variety of 'Cohousing', a model that emphasizes sharing and community building [Krokfors, 2012; www.cohousing.org]. Typical for the Netherlands is that sub-clusters of 5-8 individual units around a shared kitchen each are grouped to form the whole project, around a common garden and a function room [Krabbendam xxx]. The residents' association is responsible for new members, maintenance, garden and so on. The Dutch national organization currently has a membership of 54 projects, estimated to be one third of existing co-housing[41]. The CW projects do not always have the same

40 Whereby 'risk-avoiding' money placement is seen by some funds in mainstream industrial models and by others in future-oriented low-energy models for housing. Although affecting co-housing, this discusion is out of the scope of this thesis.

41 www.lvcw.nl [last accessed February 2017].

degree of self-organisation, and SW are often attached to special services for seniors such as meals, or medical assistance units[42]. The autonomy of groups fluctuates over time, because HA are bound to strict European and national regulations. This can lead to situations, amongst others, where in one cluster tenants live with different rent levels per m^2.

In 2000 a national policy was adopted to encourage home-ownership, aiming for a minimum 30% share of self-development in housing production [Boonstra and Boelens, 2011]. Initially, the new policies for self-development followed primarily a single-household model, giving out individual plots with 'building envelopes'. Increasingly, this is organised following the *Baugruppen* model, clustering households for the building process, with costs optimisation as main motive. Residents' building initiatives collaborate with the established institutional housing partners who provide financial or administrative back-up. During the co-creation (design-)process, some groups discover the design-criteria as introduced above for co-housing, and incorporate some of the possibilities that collective development offers, such as clustered parking in favour of playgrounds, shared bicycle storage or working spaces.

So far, and despite supportive policies, subsidies and expert-programs the percentage of self-development stabilizes around 15%. However, a side-effect of these policies is that the building industry is increasingly diversifying its 'product' or collaborating with residents' housing initiatives in demand-driven local development (see chapter 7). They build on the experiences of co-housing pioneers, such as the *Bongerd*: a typical Dutch co-housing project in Zwolle, a medium-sized town and flourishing regional centre in North-east Netherlands,

§ 5.4.1.1 MW2 de Bongerd 1997

In 1993, a group of households united in the "Association for Human and Environment Friendly Living and Working MW²" [sustainable living and working]. In its 8 years of existence, the Association realised three projects of which the first was *De Bongerd*[43]. In 1996, MW2 signed a contract with SAVO housing association to realise 36 residential units in six varieties and a kindergarten and some office-units (together 250m^2) built on a former orchard (*Bongerd*). The land of about 2000 m^2 had been made

42 www.lvgo.nl [last accessed February 2017].

43 *https://sites.google.com/site/mmwzdebongerd [last visited april 2017]*

available by the Municipality in an urban extension area. The collaboration included a mixed-tenure structure (see figure 5.6), but the MW2 is responsible for selecting tenants (20 units) and home-owners (16 units), except for two apartments that are operated by a social assistance care-institute, for ex-psychiatric patients. The SAVO delivered professional services such as financial administration and supervision of the building works and acted as formal client for the contractor. The residents' association elaborated the design principles with the local planning department, who recognised the environmental ambitions of the initiative, for example by applied lower parking-norms and optimising south-orientation. This organic layout, and the common green, makes the project stand out from the geometric morphology of the neighbourhood. Detailed planning was done between the residents' association, SAVO and an architect, (ORTA ATELIER) and a consultant for sustainable building (C.Ravesloot). The units are built of (then new) pre-fab high-isolation wooden elements equipped with water-saving devices. Houses are heated with a then new, now standard HR, high efficiency heater with solar boiler, in addition, the ownership houses have a rain-water-recycling system. A subsidy in the 'Demonstration project sustainable building' was granted for extra costs of innovations.

FIGURE 5.6 Bongerd, residents maintain the semi-public garden with fruit trees, BBQ corner, seats. With a public footpath crossing it works like a 'campus' Source: Author, 2012

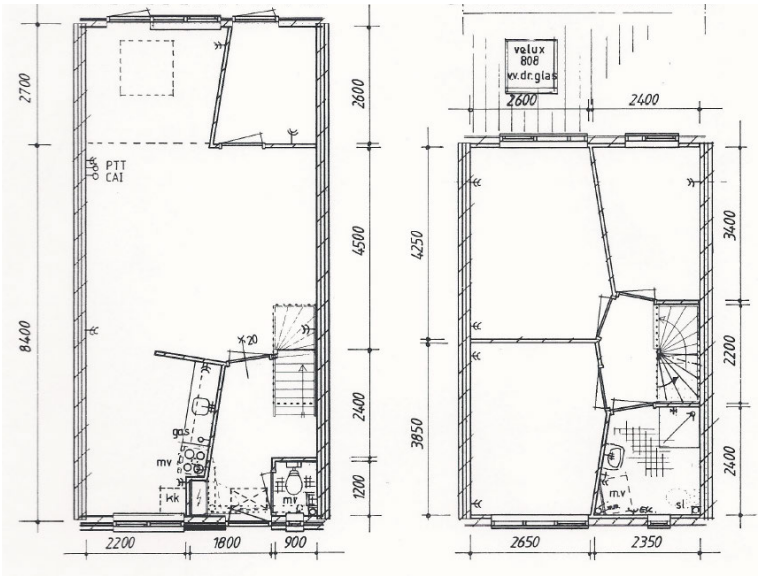

FIGURE 5.7 Bongerd, floorplan individual unit [Source: ORTA architect]

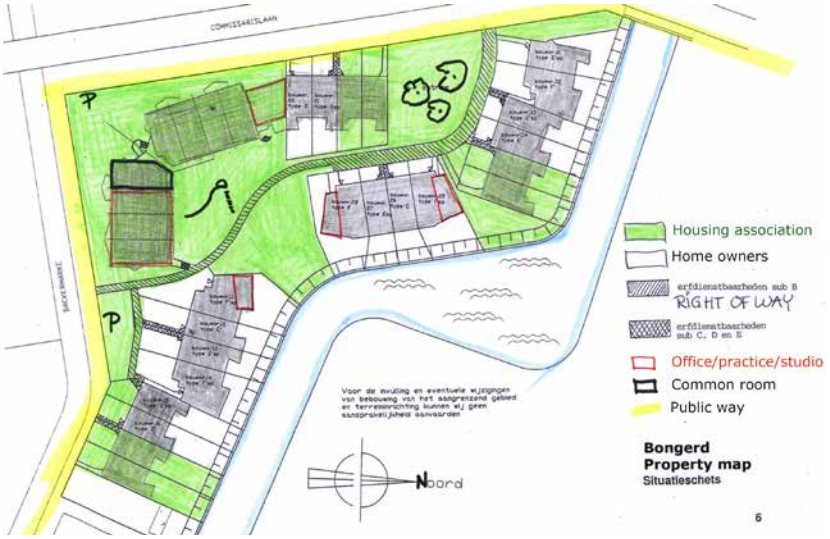

FIGURE 5.8 Bongerd: common rooms and services

TOC

§ 5.4.2 Switzerland

In post-World War II Switzerland, the housing deficit was addressed mostly through housing coops, who received support from State, Kanton or municipality. The Swiss Federation of housing coops[44] assembles around 60% of the not-for-profit housing stock amongst its members, both as larger scale housing associations and small-scale, membership-steered coops. This section is concerned with the contemporary initiatives as membership cooperatives, which is run by a board of volunteers. All tenants are also members and own a part of the cooperative, which gives them priority for renting a house or apartment. Most co-operatives offer additional services such as childcare, health facilities, common activities, etc. Especially in major cities the lack of affordable housing forms a major incentive for civil initiative, and the coop format has regained new interest in the 21st century. The example of Geneva, cited below, shows that they are again seen as important planning partners.

As in France and Germany, Cooperative housing is seen as an alternative between the subsidized sector and the free market. Zurich has the highest percentage of coops [±14%, Courvoisier et al, 2015], and some cases such as '*Mehr als Wohnen*' [more than housing] and its '*Hunziker Areal*' are internationally known as 'best practices'. While the municipality of Zurich owns a large share of the land, Geneva has very little land that can be used to meet housing policies. Moreover, it is located on frontier of Switzerland, France and Germany. Planning issues are scattered over different authorities (housing, infrastructure, services) Nonetheless, in the last years, several cooperatives have been able to realise a number of projects; 4-5% of the housing stock belongs to coops.
In Geneva agglomeration, pressure on the housing market is high, and the share of affordable housing has diminished from 70% to 30% [Tranda-Pittion, 2010]. With the availability of brownfields, such as *Industrie*-areal *La Jonction,* 230 Ha where 12.000 new dwellings are being planned, there are new opportunities and cooperative housing is given a key-role in the development[45].

44 https://www.wbg-schweiz.ch/ last vistited 24 May 2017

45 "Den Wohngenossenschaften soll dabei eine Schlüsselrolle zukommen." Statsrat Hodgers, 2016 interview; URL

§ 5.4.2.1 Equilibre: a typical Swiss co-op project, 2007

One of such partners is *Equilibre* (equilibrium), a Geneva-based housing coop '*looking for the balance between individual and collective needs, and with natural resources*' (Charter 2006, authors' translation) Having grown from a small, voluntary initiative of 5 members in 2005, it is now a co-operative with a professional administration and (2016) 6 (part-time) employees who run the cooperative and develop new projects. In 2016 it accommodated 181 households Its name refers to the first priority: ecology, which translates into design principles such as high density, low-energy and low-impact construction. Accommodating diverse household types and play a positive part in the neighbourhood is the other pillar of its philosophy[46].Its first project started 2007 and was realised in 2011, together with architects Fuchs & Huber and future inhabitants. The plot was made available by the city at a 99-year lease for three coops who were given a building envelop of 3-storeys (see map). The *Equilibre* building holds 13 residential units grouped around two staircases, with south balconies. Apartments follow the Swiss 'mixed housing' (HM) regulations for affordable housing. To keep costs low construction is of high insulation standardized wood-panels and when possible (future) residents participated in building works. The low-energy building is connected to a district heating system and water recycling system in the common garden. In contrast with the other projects on the premises, *Equilibre* choose not to create underground parking reducing the need for parking space through a car-sharing system. Instead, the (concrete) basement contains common rooms, such as laundry, meeting, and guestroom. It is equipped with dry (compost) toilet systems, which after five years of use were positively evaluated. Together with the wood-panels *Equilibre* continues to apply this technology in other projects.

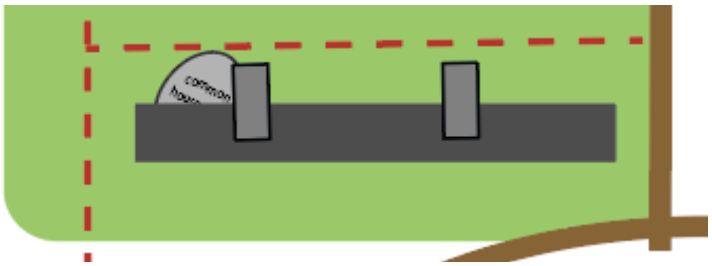

FIGURE 5.9 Equilibre. location of shared spaces

46 www www. cooperative-equilibre.ch [last visited april 2017]

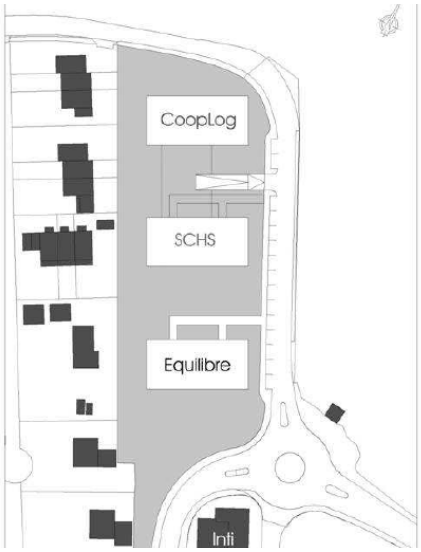

FIGURE 5.10 Equilibre: the parcellation of the new coops stand out from their surroundings. As in project De Bongerd, the landscape is campus-like [Source: equilibre]

FIGURE 5.11 Equilibre: Acces to ommon rooms in Basement, with amphi-theater, and to staircases [picture: Tussen Ruimte 2011]

FIGURE 5.12 Equilibre, streetfront [Picture: Tussen Ruimte, 2011]

§ 5.5 Projects compared

Despite the different landscape and planning conditions, table two shows the co-housing agenda of diversity, inclusiveness and sustainability leads to common design features, such as the choice for low-impact, renewable wood-panels.

UNITS, TENANCY	BUILDING TYPE & CONSTRUCTION	ENGINEERING	COMMON SPACES	GOVMTAL PROGRAM / SUBSIDIES	ARCHITECT/ CONSULTANTS
Bongerd (1997, Zwolle)					
16 indiv owner, 20 rental units	Combined apartment building and terraced housing	Individual heating, soar boilers, water recycling system for individual. property	Playground, semi-public garden	Demonstration program sustainable building	Atelier ORTA, co-creation
Equilibre (2007, Geneva)					
13 rental units, Members Coop	3-storey Wooden walls, concrete floors & staircases	District heating, water recycling system in garden,	In basement: Laundry, meeting, guestroom, bicycle shed, playground	Public land, subject to Norm System public housing	Thomas & Huber

TABLE 5.1 Differences and commonalities between CH and NL cases

The individual units are relatively standard, as departing from the Housing Act regulations tends to be costly (if at all permitted). The Dutch building regulations prescribe minimum requirements, but in general these are seen as standard.

Mix of household types was a priority in both projects, but the mixed tenure is typical in the Dutch context, where the Swiss model of cooperative is hardly found. The project *Bongerd* includes a Kindergarten and small business mixed use and mixed property, the different uses are evenly distributed over the different real-estate owners. Equilibrium does not include 'commercial' uses.

The morphology of the projects proved to be different from the morphology of their surroundings. *Bongerd* is located in an urban extension based on the compact-city idea, at cycle-distance from city centres and a railway-station. The VINEX-era (1995-2005) is a period of formal urbanism, with detailed master-planning, based on industrially produced row-houses [Cammen and de Klerk, 2012]. As the satellite images show, the subdivision and parcels of the neighbourhoods is completely based on rectangular (90') geometry, which does not include spilled-over, void or in-between land. *Equilibre* is part of a densification operation introducing apartment buildings in an area largely consisting of detached houses.

Both projects reduced the part of the space allocated for parking in favour of green space. This is based on below the norm car-ownership, compensated by share-car programs and high cycle-accessibility. Both projects present semi-public outdoor garden & playground, and use the space for rain-water recycling. However, the design is very different: In *Bongerd* the green forms an inner courtyard with for an open structure, 'meandering' around common green and crossed by public foot-/cycle paths. This organic lay-out enables diversification of the landscape, allowing for that permit right of way but also expresses private space with fluid or soft boundaries. The *Equilibre* block is situated in the middle of the semi-public green, that it shares with two more apartment blocks. The introduction of semi-public spaces requires adaptation of legal and social conventions, because property, liability and use are distributed over multiple parties (stakeholders). The residents' association that maintains the semi-public garden may have different ideas about paving, lighting and planting than the norms and standards of the municipality. Finding a compromise becomes more difficult when public infrastructure crosses the co-housing land, as happens in most of the Dutch cases. For example, in *Bongerd* the playground is partly privatized by the Kindergarten firm, which is bound to liability laws and insurance. This complex situation can lead to new contract forms between municipality and residents' association, between RA and home-owners are part of the project design.

In both projects' responses to accommodate diverse user groups, 'Diversity' is expressed in a variation of unit size, and *Bongerd* offers both apartments and houses as well as tenure and financial variation. Both projects in their design briefings explicitly state that these differences should not be visible in the (exterior) architecture, there is a uniform treatment of facades, roofs, entrances and so on. Based on analysis of six Cohousing schemes in Denmark, Sweden, and The Netherlands, Cooper Markus (2000) formulates a hypothesis that: "*It is possible that a building design which looks different from its surroundings may engender a stronger feeling of community among cohousing residents than one that blends in.*" She continues to list 'uncertain' features that may support or contradict the hypothesis, amongst which:

c) whether the cohousing community is at a higher density than its surroundings or more or less the same. The greater the contrast in density, the more cohousing residents may identify with each other rather than with the wider community. [Cooper Markus, 2000:163]

This is a problematic approach, first of all because of the concept of 'density'. The field study demonstrates that in architectural terms, co-housing individual units are not fundamentally different from mainstream housing, under comparable circumstances. Floor-plans of individual units follow general conventions, in the Netherlands based on the nuclear family unit [Tummers, 2013; Jarvis, 2012; Ottes et al, 1996].

Moreover, the minimal requirements set out in the Building Act have become the general standard [*Bouwbesluit 2012*].

Exterior characteristics are often regulated by the zoning plan, prescribing heights, plot-size, typologies or even style. Where the co-housing initiators have more influence, the exterior becomes more reflective of their sustainable ambitions (wood cladding in *Bongerd*).

§ 5.6 Demand-driven design: top-down or bottom up?

This architectural analyses of realised projects brings forward the question in how far the principle of self-management and co-creation of co-housing produces different spatial qualities than institutionally steered design? Another Swiss example based on similar principles as co-housing, but initiated by professionals and public authorities, illustrate that this is not essential when the design is steered by core-values of sustainability:

§ 5.6.1 The '2000 watt society': a Swiss spatial strategy to mitigate climate change

The objective to reduce CO2 emissions by keeping global warming below two degrees Celsius limit was set up by the United Nations Framework on Climate Change Convention (UNFCCC) and revised to 1,5'C in the Paris agreement in 2016. The Swiss '*2000Watt society' aims for a maximum "2000 Watt and 1 Ton CO2 per person, globally justly distributed'* and promotes innovation in social, societal and technical domains [Fachstelle 2000-Watt-Gesellschaft, 2013[47]]. The city of Zurich adopted an energy-policy to reduce the consumption per household form 5000W to 2000W in 2050 [City of Zurich, 2011]. Architect Hans Widmer[48] developed an architectural proposal for the "2000W lifestyle" reducing energy consumption of Swiss households by 2/3 (figure 5.13). The concept of the *Neustart* (New Beginning) offers accommodation for approximately 500 persons, and a micro-centre, together on the surface of one hectare because:

47 2000W_Folien_Basiskommunikation_v05 www.2000watt.ch [accessed 11 June 2014] http://www.smartcity-schweiz.ch/de/ [accessed 31 January 2016]

48 Widmer: http://www.neustartschweiz.ch/ http://o500.org/

"*we believe that the suitable size for cooperative housing and living projects lies somewhere between 450-800 persons*" [http://o500.org/ DATE]. Housing typologies include 30 small units for seniors and three living groups for young people so that '*generations will live apart and work together*'. The remaining ±200 houses seem to target nuclear families (figure 5.13).

TEXTBOX 5.1

WHY IS 2000WATT 'LOW ENERGY'?

According to the '2000-W society' principle an assigned maximum overall power of 2000 Watt (2 kW) per person would reduce the average energy-consumption for Swiss households to 40% of the present situation, in other words to a maximised energy consumption of 17,500 kWh/inhabitant/year (one year = 8766 hrs). On 8.3 million inhabitants, this amounts to annual savings of 8.3 million x 17,500 = 143,000,000 MWh/year (143 TWh/year), which is the equivalent of the total current energy use of 8 million Dutch inhabitants.

At this moment, the average Dutch inhabitant can be accounted for a total energy use of 54 MWh, or a power of 6.2 kW for housing, transport, industry and other forms of energy use [CBS]. About 20% of this energy-demand is related to housing. Most of the housing stock is presently 'Label C or D', hence achieving an energy-demand reduction for housing by 75% alone would reduce the necessary installed 6.2 kW to 6.2 - ((6.2 x 0.2) x 0.75) = 5.3 per inhabitant. So we can see the 2000 Watt society is an ambitious goal.

Obviously, such generic averages are only rough indicators as there are large differences in energy demand between households. Nevertheless, the indicator compares to the calculation of Equilibre, who demonstrated that a housing-related footprint of 25% can be reduced to 5% of the total. Energy plays an important role because it is included in the footprint as direct consumption (e.g. for heating) and indirect (e.g. for production of building components).

The micro-centre "*contains common kitchen, Restaurants (with Take-Away), Bars, Library, Secondhand-Depot, Repair service, Laundry, guestrooms, Bath, Childcare etcetera. This is of course only feasible and viable, when all neighbours contribute with voluntary labour*" [Neustart, 2016, authors' translation]. This makes the proposed neighbourhood a concept similar to co-housing, explicitly stating that 'sharing is essential for the future'. Other than co-housing, the model does not depart from the human interaction, in theory and by co-housing groups often referred to as 'community-building'. It is based on energy-calculations and spatial principles that are known to be energy-efficient. The brochure sketches a perspective for the whole of Switzerland [p.13], but it does not provide details on how decision-making and participation in such large basic communities can be organised. While Co-housing practices are intensively concerned with processes of decision-making, looking for inclusiveness and consensus, the 2000W-model is concerned with the role of municipalities to facilitate the transition of towns towards the 2000W model.

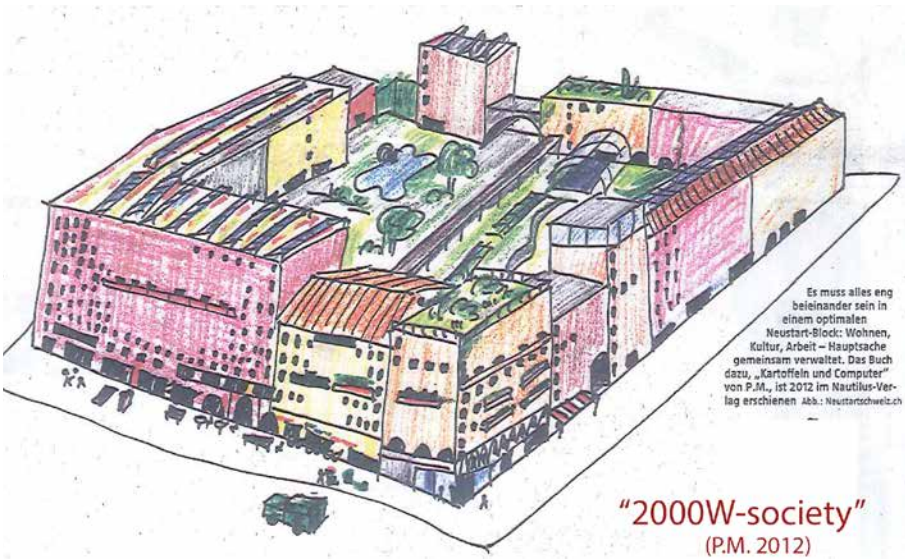

FIGURE 5.13 Concept for 2000Wat society [Source: www.neustarschweiz.ch, 2015]

The concept was adopted by Zurich Municipality, implemented amongst otgers by the Mehr Als Wohnen (MAW, More Than Housing) society that profiles itself as 'experimental learning platform for new forms of participation' [Purtik et al, 2016: 115]. "*Unsere Vision ist die 2000-Watt-Gesellschaft. Energieeffiziente Gebäude, neue*

Technologien und wenig Autos unterstützen einen umweltschonenden Lebensstil und sparen Ressourcen. Wir legen Wert auf hochwertige Architektur, auf Qualität in der Bauausführung und auf Nachhaltigkeit im Unterhalt der Gebäude."[49] It delivered 400 units on the *Hunziker Areal* (4,1 Ha), divided over 34 cooperatives, member of MAW[50]. The central office acted as decision-making body and directed the planning and design process, member cooperatives were involved in an intense participation process at all stages, especially in thematic working groups. In the 1990s, self-managed projects in the region of Gelderland (Netherlands) created WBVG[51] with a similar aim. This model is successful but so far has not been reproduced.

§ 5.7 Conclusions

The examples from Netherlands and Switzerland presented here show that resident-led design can lead to innovative, housing that lowers environmental impact and facilitates interaction between neighbours. The research showed that co-housing architecture in both countries is characterised by a variation of housing typologies and accessibility to diverse user groups, and innovations are both found in the physical design and financial models. Residents are the driving forces behind the application of low-impact building materials and low-energy utilities, based on an integrated understanding of sustainability as well as self-interest: costs of housing are calculated in the projects as a sum of rent/purchase per m^2; energy costs and typical co-housing costs for example for shared spaces.

In this way, resident-led design or co-creation leads to more sustainable and demand-driven housing qualities than mainstream, institutionally steered design, and at similar or lower costs. The case-studies also show that the extent to which co-housing groups can realise their societal and environmental ambitions depends on the institutional collaboration they encounter. This is more a disadvantage for Dutch co-housing initiatives, who depend on housing associations to build. The autonomous housing co-operative, as it is part of Swiss identity, has more room for manoeuvre and can rely on an infrastructure for knowledge and finance.

49 Core values of MAW are the 2000W society: energy-efficient buildings new technology and less cars support a low-impact lifestyle. https://www.mehralswohnen.ch/hunziker-areal/quartierteil/

50 https://www.mehralswohnen.ch/hunziker-areal/quartierteil/ November 2016

51 explanatory note & website (not a coop because needs toegelaten instelling- ref Omslag lezing Smit?)

This is especially fruitful when resident-led cooperatives operate in an environment that shares its core values, and adapts the planning conditions accordingly. The '2000W society' is an example of a concept that can unite urban policy and civil initiative, each assuming different roles in the realisation of projects.

In the Swiss examples, the involvement of residents is complemented by a central office of the coop(s) that offers technical and administrative support. Such office can also alleviate the tasks of voluntary workers and mediate in the tensions that can arise within the groups when there is no balance of time-investment or expertise (see chapter 10).

During the planning and design, contracting and building phases, the future residents invest time at their own cost. More than in turnkey delivered housing, they are involved in every step of the way. Co-housing initiatives go through an explorative phase for their own project, this time includes building social dynamics and learning processes which are not part of a conventional. This learning is handed on to other initiatives, for example through local associations such as MW2 in Zwolle; through national federations similar to Dutch cohousing *Centraal Wonen* (LVCW), National networks such as CODHA for *Equilibre*, or international networks such as *Urbamonde* [URL].

In other words, transfer of knowledge and experience takes place, and co-housing residents can become experts on planning processes. Yet despite positive experiences, neither in Netherlands nor in Switzerland the coops/collectives are represented in statistics as co-ownership. Formally, to date only categories for private or institutional home-ownership exist.

As an overall conclusion, this comparative study indicates that co-housing initiatives in the Netherlands could be realised more widely and more smoothly, from an architectural and technical perspective, if they were supported by the institutional planning system. Besides optimising the qualities of co-housing projects, their experiences could then also find their way to integrating co-housing ideas in mainstream housing design.

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References

Boonstra, Beitske, and Luuk Boelens. "Self-Organization in Urban Development: Towards a New Perspective on Spatial Planning." *Urban Research & Practice* 4, no. 2 (August 26, 2011): 99–122. doi:10.1080/17535069.2011.579767.

Bresson, Sabrina, and Lidewij Tummers. "L'habitat participatif autogéré en Europe : vers des politiques alternatives de production de logements ?" *Metropoles* Politiques alternatives de développement urbain, no. 15 (December 2014). http://metropoles.revues.org/4622.

Cammen, Hans van der, and Len de Klerk. *The Selfmade Land. Culture and Evolution of Urban and Regional Planning in the Netherlands*. 1st ed. Houten - Antwerpen: Uitgeverij Unieboek | Het SPectrum BV, 2012.

Chase J, Crawford M and Kaliski J (eds) (2008) *Everyday Urbanism, expanded version*. Berkeley, California, US: Penguin Random House. Available from: http://www.penguinrandomhouse.com/books/26446/everyday-urbanism-by-edited-by-john-leighton-chase-margaret-crawford-and-john-kaliski/9781580932011.

Cooper Markus, Clare. "Site Planning, Building Design And A Sense Of Community: An Analysis Of Six Cohousing Schemes In Denmark, Sweden, And The Netherlands." *Journal of Architectural and Planning Research* 17, no. 2 (summer 2000): 147–63.

Courvoisier, Hofer and Riese 2015 'Switzerland' pp 32-39 in: Wohnbund, e. . (Ed.),. Europa Gemeinsam wohnen | Europe Co-operative Housing. Jovis, Berlin.

Denefle, Sylvette, Sabrina Bresson, Annie Dussuet, and Nicole Roux. 2006. *Habiter Le Corbusier. Pratiques sociales et théorie architecturale*. Collection "Le sens social," issn 1269-8644. Rennes (Fr): Presse Universitaire de Rennes.

Droste, Christiane. "German Co-Housing: An Opportunity for Municipalities to Foster Socially Inclusive Urban Development?" *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 79–92.

Fedrowitz, Micha, and Ludger Gailing. *Zusammen Wohnen. Gemeinschaftliche Wohnprojekte Als Strategie Sozialer Und Ökologischer Stadtentwicklung*. Blaue Reihe; Dortmunder Beiträge Zur Raumplanung 112. Dortmund: IRPUD, 2003.

Fromm, Dorit. "Seeding Community: Collaborative Housing as a Strategy for Social and Neighbourhood Repair." *Built Environment* 38, no. 3 (2012): 364–94.

Fromm, D. 2000. Introduction to the Cohousing Issue." *Journal of Architectural and Planning Research* 17 (2): 91–93.

Haydn, Dolores (1979) 'Seven American Utopias'. Massachusets: MIT press

Hayden D (1980) What Would a Non-Sexist City Be Like? *Signs: Journal of Women in Culture and Society* 5(3, Supplement): S170–S187.

Horelli, Liisa and Kirsti Vespä (1994) 'In Search of Supportive Structures for Everyday Life' in: I. Altman - A. Churchman (eds.) '*Women and the Environment' Human Behavior and Environment,* 13(?): 201-226. New York: Plenum

Jarvis, Helen (2011) 'Saving space, sharing time: integrated infrastructures of daily life in cohousing.' Environment and Planning A, 43.3, 560-577

Jarvis, helen. "Against the 'tyranny' of Single-Family Dwelling: Insights from Christiania at 40." *Gender, Place & Culture: A Journal of Feminist Geography* 20, no. 8 (2012): 939–959,. doi:10.1080/09663699X.2012.753583.

Klerk, L.A. de (1980). *Op zoek naar de ideale stad*. Deventer: van Loghum Slaterus

Krabbendam, P., 2011. *Betrokkenheid. Onderzoek naar situationele en instrumentele kwaliteiten in de gebouwde omgeving* (PhD dissertatie). TU Delft, NL.

Krämer, Stefan, and Gerd Kuhn (2009). *Städte und Baugemeinschaften*. Stuttgart + Zürich: Karl Krämer Verlag, 2009. wuestenrot-stiftung.de.

Krokfors, Karin (ed.). 2012. 'Co-Housing in the Making, introduction to the thematic issue' *Built Environment* Volume 38 (3): PM pages
Labit, A., 2015. Self-managed Co-housing in the Context of an Ageing Population in Europe. Journal of Urban Research and Practice 8, 32–45.
Lietart, Matthieu. *Le cohabitat. Reconstruisons des villages en ville!* Brussels: Editions Couleur Livres aslb, 2012.
Greed, Clara. "Ottes, L., Poventud, E., van Schendelen, M. and Segond von Banchet, G. (eds), 'Gender and the Built Environment: Emancipation in Planning, Housing and Mobility in Europe' (Book Review)." *Town Planning Review* 67, no. 4 (October 1996): 509. doi:10.3828/tpr.67.4.l3m72x8167664200.
Poldervaart, Saskia. *Tegen conventioneel fatsoen en zekerheid. Het uitdagende feminisme van de utopisch socialisten*. Amsterdam: Uitgeverij en boekhande van Gennep bv, 1993.
PM Putt, DASH#8 2013. 2013 t Hool, ook:
Schippers, 1995
Sangregorio, Inga-Lisa. 1995. "Collaborative Housing: The Home of the Future? Reflections on the Swedish Experience." In *Gender and the Built Environment*, edited by L. Ottes, E. Poventud, M. van Schendelen, and G. Segond von Blanchet, 101–14. Assen (NL): van Gorcum
Sargisson, Lucy. 2012. "Second-Wave Cohousing: A Modern Utopia?" *Utopian Studies*, 23(1): 28–56.
Toker Z (2004) Women's Spatial Needs in Housing: Accommodating Gender Ideologies, Use Patterns, and Privacy. Raleigh: Graduate Faculty of North Carolina State University.
Tranda-Pittion, Michèle « What are the right land supply policies for housing in the Geneva transfrontier conurbation? », Revue de Géographie Alpine | Journal of Alpine Research [Online], 98-2 | 2010, URL : http://rga.revues.org/1219 ; on 01 October 2016.
Tummers L (2013) Urbanism of proximity: gender-expertise or shortsighted strategy? Re-introducing Gender Impact Assessments in spatial planning. *Tria Rivista Internazionale Di Cultura Urbanistica* 10(1/2013): 213–218.
Tummers, L., 2015. Understanding Co-Housing From A Planning Perspective: Why And How? Journal of Urban Research and Practice 8, 64–78. doi:http://dx.doi.org/10.1080/17535069.2015.1011427
UrbaMonde (2015) *Cooperatives, partenaires du territoire*. Geneva: www.urbamonde.org
UrbaMonde (2015) *Production Sociale de l;Habitat* Geneva: www.urbamonde.org
Vestbro D and Horelli L (2012) Design for Gender Equality: The History of Co-Housing Ideas and Realities. *Built Environment* 38(3): 315–335.
Vestbro, Dick, ed. *Living Together- Co-Housing Ideas and Realities around the World*. Stockholm: Royal Institute of Technology division of urban studies in collaboration with Kollektivhus NU, 2010.

6 Understanding co-housing from a planning perspective

Why and how?

Introduction: international comparison

The paper addresses research gap 1: planning perspective, arguing that it is not possible to be fully understand co-housing without taking into account its planning context. For example, creating a co-housing project in the former communist countries can not be assessed in the same way as an initiative in an overheated metropolitan housing market such as London or Amsterdam. Further studying planning context is useful to understand co-housing for two reasons: first, to make the planning trajectory more accessible for initiatives (and thus allowing better quality) and second to identify lessons learned in small-scale initiatives that may be useful for urban renewal and spatial development in general. The study identified which type of data on co-housing can be useful for planning practice.

The paper describes international differences and similarities in driving forces behind the re-emergence of co-housing initiatives. In all major towns, the inaccessibility of the housing market and the 'return to the city' movement plays an important role. Co-housing initiatives often address local authorities to obtain a building location. This brings forward issues of fairness, and planning departments have to formulate conditions that determine the accessibility, and urban qualities of the neighbourhoods. A key-issue is the insertion in urban fabric: co-housing can provide essential proximity services bat also turn into a gated community in a hostile environment. Spatial planners tend to see co-housing initiatives as an opportunity for gentrification, but also have a responsibility to regulate the push-out effects that may occur, as these are caused by a dynamic on larger than project scale. The results are located both at an instrumental, local approach looking for supportive planning systems, and an abstract, theoretical level proposing a new field of research.

§ 6.1 What is co-housing?

Collectively build and self-managed housing clusters, co-housing for short, emerge as a renewed housing typology that raises many expectations for creating vivid social networks and healthy environments [Parasote 2011, Krokfors 2012, Vestbro 2010]. Cohousing or *Centraal Wonen* has gained momentum in the 1980s and now forms an international network of living with shared spaces in a variety of management forms [Wetenschapswinkel 2012]. The persistent attention of researchers hints that there is an important message in co-housing as innovators of housing provision, co-habitation (social cohesion) and sustainable environmental technology. Especially the interaction and involvement of inhabitants makes co-housing different from classical condominiums or co-ownership. The notion of 'participation' is not only challenged but gaining new intensity through co-housing practices. Nevertheless, the value and contribution of co-housing initiatives to housing provision and sustainable urban development, both quantitative and qualitative, has so far not been assessed beyond case-study level. This omission is partly due to the 'idealist' connotation of co-housing, that makes housing professionals dismiss the model as only suitable for driven minorities or elite groups. Another part of the explanation is the manyfold appearances of co-housing: what to include into the statistics or not? In this paper, the overall term co-housing is used to indicate a wider scope than strictly the model of the international cohousing association[52], to include various initiatives of residents' groups collectively creating living arrangements that are not easily available on the (local) housing market, such as the French *Habitat Participatif*; German *Baugruppen* and Dutch *Collectief Particulier Opdrachtgeverschap*. The paper is based on literature research in France, Netherlands and Germany, as well as field trips including several other EU countries and in-depth case-studies performed in the Netherlands in 2011-12.

Co-housing is an expression of contemporary citizenship, citizens actively taking the housing and environment situation in their own hand. These environments can be located in urban, sub-urban or rural areas; newly-build or (re-used) existing real estate and involve any number of households, as long as the organizational entity overlaps the spatial entity [Fedrowitz/Gailing 2003]. While the housing and planning contexts vary from one country to another, the ideology and intentions of inhabitants of co-housing are remarkably similar. Typical features are: a structure for collaboration during building and management; ambitions to create a 'non-anonymous' neighbourhood; non-speculative, affordable housing; energy-efficiency buildings and a reduced ecological footprint.

52 defined as *'Cohousing is a type of collaborative housing in which residents actively participate in the design and operation of their own neighbourhoods. Cohousing residents are consciously committed to living as a community. The physical design encourages both social contact and individual space.'* [http://www.cohousing.org/what_is_cohousing 24 august 2010].

FIGURE 6.1 Co-housing initiatives aim to create friendly, affordable housing clusters for mixed households and service. Vrijburcht, Amsterdam (NL) (picture: Tussen Ruimte 2011)

In the last decade, several authors have signalled that contemporary co-housing can be characterized as a pragmatic response to demographic change and new life-styles [Kläser 2006; Jarvis 2011]. Energy-efficiency and social networks are not merely idealist concepts, but necessities to reduce the cost of housing, including energy-bills; combat loneliness after professional life and organize the tight schedule of young middle class families. Nevertheless, features of the idealist origins also remain. Following the charters and declarations published by co-housing networks, the initiatives can be interpreted as a concrete response to what in many European cities is the objective of urban policy: social cohesion, care for an aging population, local identities under globalization, healthy and child-friendly environments, locally based responsible economy, energy transition, and participation in urban development. Co-housing projects attempt to bring into practise a discourse of diversity, solidarity and inclusion, rather than of homogenuity and exclusion. It is this discourse that interests not only inhabitants but also researchers and politicians as a desired model for future housing provision [Maury/Bernard 2009] or a strategy for gentrification [Fromm 2012].

Lejeune concludes that, at present, alternative housing initiatives are 'still halfway between utopia, experiment innovation and social transformation'[53] [Lejeune 2009: 108]

Although in number co-housing may not represent a large percentage of the housing stock, there is substantial attention for 'self-managed accommodation'. Official statistics about housing (both national and European, such as Espon or Eurobarometer) do not record co-housing, as (so far) it is too small in numbers. Centraal Wonen (Netherlands) for example has a membership of 54 projects, with 3-160 units per project (www.cw.nl 2013), in addition the Dutch federation of communal housing registered some 230 co-housing for senior groups (Federatie www.GemeenschappelijkWonen.nl, 2012). The French research team Alter Prop registered over 250 initiatives since 2003 (http://alter-prop.crevilles-dev.org/, 2012). Besides the small numbers, there is the question of categorization. The Dutch bureau for statistics CBS for example only categorizes two forms of tenure: rental or owner-occupation, and two forms of garden: 'none' or 'private'; cooperative property or common use does not appear www.cbs.nl 13 June 2011].

CO-HOUSING TYPE	SOURCE	DATE	QUANTITY ESTIMATION
NETHERLANDS			
First generation 1977-97; Centtraal Wonen	Landelijke Vereniging Centraal Wonen	2013	membership = 54 projects (3-160 units per project)
cohousing senior citizens	Choi 2004; Bamford 2005		2100 units/app 210 projects
diverse	gemeenschappelijk wonen.nl "Community Addresses in The Netherlands". Federatie Gemeenschappelijk Wonen	2012	more than 300 cohousing communities; 73 mixed-generation and 231 senior cohousing, about 60 in planning or construction
Selfmanaged rental, not CW	WBVG.nl	2013	27 locations, total app 300 units
CPO (Baugruppen)	bouwenineigenbeheer.nl		App. 30 realised projects and 30 in planning
CPO (Noord Brabant)	platform 31	2012-2014	69 projects (1000 units)

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53 (*il semble que ces initiatives se situent encore à mi chemin entre utopie, expérimentation, innovation et transformation sociale*, my translation)

CO-HOUSING TYPE	SOURCE	DATE	QUANTITY ESTIMATION
PO (self-building)	platform 31	2012	building applications in NL for 3000+ units, indiv & CPO
eco-village initiatives	ZOZ#117 (Omslag)	2013	19+
other intentional communities			
FRANCE			
cooperatives de logement	Alter Prop	2013	App. 250 realised or initiated projects since 2003
ecovillages	http://gen-europe.org/ecovillages/europe-map/	2013	app. villages members of global network
UK			
cohousing …	UK cohousing network survey	2006	400 registered communities
NB Coates	http://www.cohousing.org.uk/groups	Dec-13	15 established, 47 developing groups ¶ 12 new groups
self-building			
other intentional communities	Metcalf (findhorn press)	2004	
GERMANY			
Baugruppen/	Fedrowitz (Wohnportal)	2012	15-17 % of housing stock = genossenschaft old+new model
traditional housing coop	GdW Bundesverband deutscher Wohnungs- und Immobilienunternehmen e.V	2013	3200 member coops (± 6,4 units) app 17% housing stock
	ID22		no information
AUSTRIA			
Cohousing	Wankiewicz & Gruber	2012	Numerous projects in Vienna, few in other regions
traditional housing coops	Vienna	1918-1940	
BELGIUM/FLANDERS co-housing	samenhuizen.be	2011	App. 175 projects & 50 start-ups
BELGIUM/WALLONIE Habitat Groupé	HABITAT-GROUPE.BE	2013	lists 75 Projects (wide definition)
Baugruppen'	Wonen in Meervoud (website obsolete)	2010	120 entries (not necessarily co-housing)
DENMARK Bofealleskap	Jonckheere	2010	400 projects
	Durrett	2011	

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CO-HOUSING TYPE	SOURCE	DATE	QUANTITY ESTIMATION
POLAND, co-housing			250.000 residents involved, 1% of housing stock
traditional housing coop	Coudroy-de Lille	2014	17% of housing stock
SWEDEN cohousing	Kollektivhus.nu	2012	41 projects as full members
ecovillages	http://gen-europe.org/ecovillages/europe-map/		4 villages members of global network
FINLAND asunto-osakeyhtiö			common practice (housing company or Ltd)
	BE 2012		5-6 cohousing projects (Helsinki)
	http://gen-europe.org/ecovillages/europe-map/		4 villages members of global network
SPAIN 'classical' housing coops	concovi	Dec-13	14.434 coops registered (not necessarily co-housing)
SPAIN co-housing initiatives	Masqueunacasa (sostre civic)	Dec-13	4-6 projects and 6-8 professional coops (consultants) in spain
ITALY			
eco-villages	http://gen-europe.org/ecovillages/europe-map/	Dec-13	12 members of global network
coops in Milano	Housing Lab Polimi	2012	3-4 new projects
classical' housing coops			
PORTUGAL			
CANADA	https://www.cmhc-schl.gc.ca/en/co/buho/gucoho/	2012	In 1999 there were over 2,000 housing co-ops in Canada with 111,000 members and combined assets of nearly $5.6 billion

TABLE 6.1 Table 1 the quantitative estimate of co-housing is difficult due to the variety of co-housing types and fragmented sources. [Table by L. Tummers, work in progress January 2015]

In contrast with the lack of quantitative visibility, numerous qualitative studies of co-housing give clear indications that in terms of urban/rural spatial quality the impact of single projects can be significant. As a whole the 'alternative' models of housing try to secure the three pillars of sustainable lifestyles: technical (energy), social (community), and economic (affordability). On the local scale, small projects can have considerable impact, but the insertion of small-scale projects, however resilient and communicative

in themselves, obviously is not able to solve structural problems at urban or regional scale. The need to protect their vulnerable systems of ecology and sharing against hardening urban society may even convert them in the opposite. It is therefore relevant to understand both the key-features of co-housing in general but also the cultural specific elaboration in architecture and urban models. The following section addresses the implicit message for planning of different classifications and indicators that have been made for co-housing. Section three looks at incentives for collaborative housing initiatives and how these vary between European states. Through international comparison it becomes clear how such incentives influence (local) governments response to co-housing initiatives. Consequently, the fourth section highlights how taking into account the planning context is useful for interpreting the emerging co-housing trend in Europe.

§ 6.2 Typologies of co-housing

Co-housing includes a variety of organizational and architectural models, it is a 'family' of types and who belongs to this family is often left implicit. In order to understand the direction co-housing is taking, several classifications have be used, according to different sets of criteria such as:

- Target group and residents profile
- The distance to society (alternative to mainstream)
- The degree of participation and self-management
- Community building
- Time and historical context
- The approach to Ecology /concept of sustainability
- Architecture and urban planning characteristics

In their own definitions, co-housing networks put an emphasis on self-organisation, independence and grass-root initiated, for example the Dutch Information Service on Different Ways of Housing and Living (Servicepunt Anders Wonen Anders Leven) announces on its' website: "*Key words are: ecology, collectivity, community, self-management and autonomy, self-motivation, social sustainability, intercultural community work, ecological life and sustainable building.*" [http://www.omslag.nl/wonen/ May 2014]. In practice, autonomy is relative and many co-housing projects are constructed in collaboration with institutional agencies, to ensure access to land or finance. Case-studies demonstrate that such 'hybrid' forms of 'self-organization' have both advantages, such as a professionally organised planning

process [Scanlon & Fernandez and Droste in this issue] as well as disadvantages, for example quality compromises on energy-efficiency and innovative sustainable technology [Tummers 2013, Biau/Baqué 2010]. Kläser proposes a scale of levels of self-organisation according to shared interest and life-cycle, for example: professional interest, intergenerational living or community living, which may involve different capabilities for self-organization (Kläser 2006). Van der Woude & van Dorst introduce a similar classification based in 'the binding factor that allows the group to act collectively' for example an ideology, the wish to experiment or economic motives [in: van der Woude 2012: 205].

Most authors agree that being community-led is an essential feature of the co-housing family. Nevertheless, Boelens and Visser in their evaluation of 10 years of Dutch self-commissioned projects combine bottom-up, privately or governmental initiated projects under a single term (CPC) [p. 108-114 in Qu/Hasselaar 2011]. In how far then can co-housing be identified with Collective Private Commissioning (CPC) although the underlying structures such as tenure and community-building are quite different? In other words: what are the consequences of appropriation by public authorities? Other authors insist on the 'alternative' characteristics of co-housing groups, using their resistance to mainstream values and practices as indicator. For example 'Intentional communities can be identified by a deliberate attempt to realize a common, alternative way of life outside mainstream society' [Poldervaart et al 2001] or: 'Cooperative movement is an attempt to counter outside forces (oppression) with internal organisation and –solidarity'[54] [Novy 1983: 5] This is expressed also by networks themselves, such as the announcement of the Dreamers and Diggers 'guide to communal living' as 'together we are creating a world' [*http://www.diggersanddreamers.org.uk/*].

Meijering et al (2006) performed a survey with response of almost 500 'intentional communities' in rural areas. Their aim was to establish the degree of withdrawal from 'the mainstream' and the variety that exists amongst the communities. The researchers designed a new typology of four categories with different criteria: locational, ideological, economic and social. Urban insertion and the socio-economic profile certainly play a role in the functioning of co-housing [see for example Jarvis in this issue]. The question is how co-housing as a social project influences its spatial characteristics. Is the ideology of a group relevant to planners, to a larger extent than it would be for example in social housing? Are shared spaces primarily a planning issue or a legal question? The Dutch *VROMraad* (advisory board for former Ministry of Housing)

54 *Das Genossenschaftsprojekt ist der Versuch, äußere Zwänge durch innerorganisatorische cooperation un Solidarität zu ersetzen*-my translation

signalled a trend for people to seek communities with shared backgrounds, such as ethnic, age, ecological -, artistic -, luxury lifestyle (golf-resort) and so on [VROMraad 2009]. According to the study, people are looking for 'identity' and 'safety', which is expressed in intentional communities for 'self-catering with kindred spirits' [ibid.] This definition brings golf-resorts and gated communities almost in line with eco-villages and co-housing, despite significant differences in social codes and ecological performance that have implications for urban environment. This approach reveals the frictions that may exist between the discourse of inclusiveness and the elitist character of housing communities: in how far does co-housing differ from private housing such as (luxury) condominiums or gated communities? Ruiu has identified the differences between gated communities and co-housing from a sociological point of view. Co-housing projects tend to be open or even actively engage in neighbourhood interaction [Fromm 2000, Ruiu 2014]. Seeing the difference in impact on the urban environment, defining planning criteria would be highly relevant.

As amongst others Hayden [1979] Poldervaart [1993] and Coates have described, idealist communities have designed, build and managed housing projects since the French *Utopistes* and the USA Quakers. Contemporary housing associations often have their origin in cooperatives, although their organization model has changed over the decades. The period of creation and existence of co-housing projects is relevant for the interpretation of its central characteristics, because their spatial logic needs to be placed in the dominant housing patterns of their time. For example, the architectural models for clustered housing with residents involvement of the 1960s, such as the '*Maison Radieuse*' by Le Corbusier [Denefle et al 2006], differ from contemporary low-rise eco-clusters, but they both applied innovative building materials such as prefab concrete (1950s) and straw-bale (2010s). Present initiatives rise out of a period where the single-household, owner-occupied (semi-) detached house with private garden was the ideal in most European countries. As a consequence, most contract forms and building regulations are based on the one-family unit model. Co-housing projects need to counter this during the planning process in order to realise adequate shared spaces. Also, the single-family unit is underlying calculation models, such as Energy Performance (EP) Since the introduction of EU energy-labelling, energy performance standards have been refined and sustainability concepts changed, from reducing CO2 via peak oil to passive house. This makes it difficult to assess the effective ecological performance of co-housing and to compare it to the general standard. Renewable energy is prominently figuring in many of the project briefings. Some projects have even been initiated out of a shared dissatisfaction with energy-standards in housing [Lietart 2010, Tummers 2012, Chatterton 2013]. On the other hand, Cohousing, in Dutch *Centraal Wonen*, emphasises community building rather than ecology. A systematic classification or even assessment according to these criteria has so far not been undertaken.

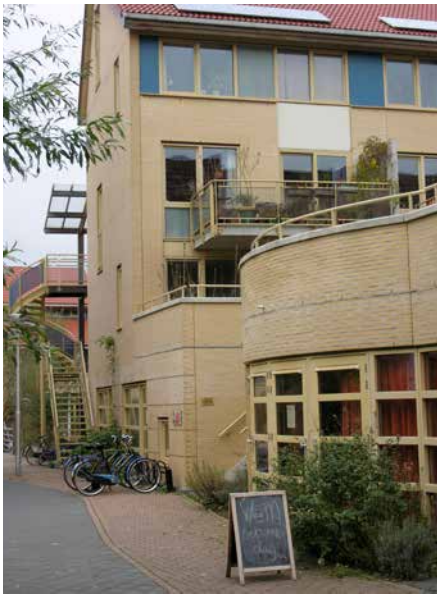

FIGURE 6.2 Common house and roofgarden, Utrecht (NL) picture: Tussen Ruimte 2012)

FIGURE 6.3 Launderette, Berlin (Germany) (picture: Tussen Ruimte 2012)

at Some researchers have analysed projects to discover architectural models and propose design criteria [Cooper Markus 2000, Williams 2005, Fromm 2012]. Due to the great variety of co-housing initiatives, and their creation in culturally very different periods and geographies, an architectural 'model' can hardly be generalized. Moreover, during realization often compromises need to be made to fit into regulations and feasibility of building components. For the mapping and engineering of the potential of co-housing from an urban/spatial planning point of view, or to formulate architectural design criteria, the impact of norms and regulations needs to be taken into account. For example: co-housing aims to facilitate sharing and meeting rather than 'security driven' behaviour, which requires an orchestration of semi-public space that can be understood by its users. In the planning process, this collides with building regulations that are based on a clear separation of public and private; and that need to be met in order to acquire building permission. Another example is the application of fire-regulations for shared spaces. Regardless of the differences in their (ideologically steered) uses, projects would encounter similar difficulties applying for building permission: where to locate the separation walls, when the boundaries between one dwelling and the next are diffused by space for communal rooms, services and workshops mixed with residential? Furthermore, the very mix of uses may collide with the (often mono-functional) zoning plan, and an aspired mix of tenure forms and affordable prices/square metre may not be realised within the legal overall planning

and housing frames. The motivation & everyday practices of communities, as well as their socio-economic and cultural characteristics, need to be connected to spatial (urban and architectural) features of the accommodation to fully understand the logic and functioning of co-housing. Rather than a new architectural model, this will bring a necessary understanding on how to develop planning criteria and adapt planning processes to facilitate and embed co-housing in urban development.

§ 6.3 Incentives for the emergence of co-housing

The rise of initiatives for collective/collaborative self-building raises the question to what is the incentive to participate in a time-consuming and risky project? Many co-housing initiators face a stressed housing market at local scale, whereby inner city housing is hardly affordable on average incomes. Several European National governments have also have recently developed policies in response to self-managed housing, amongst others Germany [Krämer/Kuhn 2009; Ache/Fedrowitz 2012], the Netherlands [SEV 2006, Boonstra/Boelens 2011], Belgium [Van Herk/DeMeulder 2009] and France [Parasote 2011]. In each state, different driving forces to promote self-managed co-housing can be identified. For example, Belgium has a tradition of self-build single houses. Land for urbanization is becoming scarce, and the support for co-housing is embedded in a discourse of higher densities and better quality of public space and architecture [Herck/deMeulder 2009]. In several countries co-housing is related to an aging population, the rising costs of care and increased loneliness of seniors especially in larger cities. As Labit shows in this issue, policies are formulated in different ways: France searches for intergenerational solutions, whereas in Germany demographic change has produced a policy directed at senior citizens. At the same time the younger generations in Germany have revived the tradition of *Genossenschaften* nowadays in *Baugruppen*, which implies a shift in the economic/cultural background of residents involved [Ache/Fadrowitz 2012; Droste/Knorr-Siedow 2012] and creates new overtures in urban development policies relying on self-development [Krämer/Kuhn 2009]. For middle class families in France, access to quality housing has become very difficult and co-housing projects seem to present an alternative. The number of grassroots initiatives has increased sharply after the legal possibilities for cooperative property, abolished in 1973, were re-installed in 2003 [Denefle 2009; Denefle-Bresson in this issue, Locatelli et al 2011]. The concept of eco-quartiers, implemented 'top-down' by local authorities as part of sustainability strategies, gives room for such projects [http://www.ecoquartier-strasbourg.net/ 12 October 2010]. The Netherlands parliament made government in 2000 adopt a new policy aiming for 30% of housing production to be self-managed. The underlying

motive was to promote home-ownership, an unprecedented policy in the Dutch history of provision by housing associations. While at first the results were slow to emerge [SEV 2006], today there exist not only manifold initiatives for collective housing and projects but also new types of professionals such as 'co-housing coaches' [see for example www.woongroepencoach.nl, *www.deregie.nl* 16 June 2011]. The co-housing culture has thus developed both through bottom-up initiative as well as top-down incentives.

The simultaneous re-emergence of co-housing initiatives in different countries, and the international exchange between networks also raise the question on (how) design and engineering solutions from one country can be transferred to another? On an urban scale, many local authorities have been inspired by a visit to the former French Army Quarters in Tübingen and Freiburg (southern Germany). Since the 1990s, these towns have adopted planning strategies for new housing areas that are based on collective self-development by inhabitants. Both the substance of planning, such as the size of plots in the Masterplan, and the process of planning, supporting the formation and development of *Baugruppen*, have been transformed over the years to embed the strategies in a structural way. However, visiting planners and administrators apply different strategies to implement 'bottom up urbanism' in their home-situation, embedded in varying planning cultures. For example: Almere, a 'newtown' close to Amsterdam (the Netherlands) is using the principle of small plots in its planning strategy, but not obliging collective building, nor implementing public space management-contracts. On the other hand, French municipalities make plot-reservations in new urban areas, the so-called '*eco-quartiers*', for single projects rather than a structural embedding of self-development [Bresson/Tummers 2014].

Comparing the impact of policy on the dimensions and success-rate of co-housing-initiatives between European countries presents some challenges of harmonizing information. For example: the qualification of urban areas, such as inner city, peripheral, suburban, brownfield and so on, vary in different countries as a result of urban policies and planning insights. Government support steered towards specific dwellers profiles (seniors; low- income) or energy-sources (PV vs insulation-subsidies) may influence the projects' design. While the EP-label is standardized Europe-wide, it also struggles how to assess standards on the use and the sources of energy. In a country where Photovoltaic panels are subsidized and widely available, the electricity production of a project may be very visible. Yet in other situations a connection to the energy network provided with 'white (hydroelectric) power' may in fact be a more sustainable solution. Conditions for housing subsidies make it impossible to mix a wide range of incomes in one cluster. In the UK, issues of affordability and inclusion are more present than in the Netherlands and lead to adjacent solutions such as Community Land Trusts [http://www.communitylandtrusts.org.uk/home]. Also, in

the countries involved, the role of architects is not the same. German architects for example have much more site-managing and coordinating responsibilities, and are more likely to act as developers than their Dutch colleagues. German *Baugruppen* are often the initiative of young architects, not only looking for proper accommodation for their growing households, but also for a profile in professional practice. Although self-building in the Netherlands is also frequently initiated by architects, the origin of co-housing lies rather in the neighbourhood and ecology movements. Architects can more or less anticipate the realization process, and emphasise the architectural experimentation while resident groups depend on the knowledge and creativity of their advisors who may not fully understand the group dynamic and design criteria it requires. For this reason, not all features of co-housing projects can be explained in the same way.

FIGURE 6.4 Public cycle route through semi-public garden of 'Meander' co-housing project in Zwolle (NL) (picture: Tussen Ruimte 2012)

§ 6.4 Understanding co-housing: does planning context matter?

Plan analyses, technical briefings or contract analyses contain data that indicate to what extent todays co-housing projects represent alternative planning solutions. However, understanding housing typology through plan analyses should not ignore that individual space, as well as household definition, is largely institutionalised and building codes make it difficult to deviate from standard or common practice solutions. Besides socio-economic pressures, the specific solutions and planning decisions need to be contextualized in historically developed institutions and procedures. For example: projects wish to optimise their insertion in the urban tissue, in terms of access to services and mobility networks. The location preferences emerging from urban analyses do not always follow these indicators, and must be related to land-policies and zoning plans. Establishing in how far planning culture allow or restrict the modelling of alternative communities and economies, is relevant to determine the future potential of co-housing. But how to unravel the key-moments where 'grass-root initiative meets planning system'?

The term 'spatial planning' is often used at the same time for both policy decisions (the substance of planning) and the governance system (the process of planning). There are many ways to describe planning systems, as well as systems of housing provision [see for example Boelhouwer, 1999].The framework developed by the COMMIN Interreg IIIB project [www.commin.org accessed 16 Dec 2013] distinguishes roughly the following aspects of planning culture:

- guiding principles
- national policies
- historical and cultural aspects
- institutions, at national, regional, local scale
- legal framework, at national, regional, local scale
- land-use and other functional regulators
- Planning process
- Participation

Looking at these aspects, and crossing them with the housing system, questions to be considered when contextualizing co-housing are for example regarding guiding principles: What is the housing standard? How do the co-housing models relate to the predominant housing typologies in the respective countries? Many co-housing clusters consist of a layout with mixed size housing units around a common semi-public space, with shared services as additions. In other words, contemporary co-housing does not present a radical architectural proposal as did the utopian communities of

earlier centuries, but they do challenge current urban design practice based on a strict separation between public and private [Tummers 2011].

Historical and cultural processes lead to housing provision dominated by public or by social agents. Relevant for co-housing is what forms of tenure and home-ownership exist? For example: condominiums are hardly known in the Netherlands whereas in France co-property is widespread. On the other hand, mixed tenure is a typical Dutch phenomenon. How can the co-housing benefit from each contract-type?

Concerning the legal framework, the nature of building law and housing regulations can be looked at: do they consist of detailed prescriptions or rather indicative categories, that might be more flexible and allow for experimentation? Do the regulations address public or private professional sectors, and in what way the interests of private clients are secured?

An important aspect both of formal and informal planning culture is to make explicit what the word 'participation' means in practice? Are residents generally taken serious as planning partners or rather seen as legal obligation or even nuisance in planning procedures? The realization of co-housing is a negotiation process [Biau/Baqué, 2010], and in some countries co-creation is more established than in others. Co-housing as self-organization presents various degrees of participation: from delivering input during the design process to being the client i.e. deciding on location, budget and design, or even self-building. On the other hand, new trends in planning and building, such as efficient heating, material innovations, domotica for ambulant care and installations (water)-recycling are hard to follow for one-time self-developers, and may lead to high-tech housing that is not suitable for self-management.

FIGURE 6.5 Semi-public space between Baugruppen, Vauban, Freiburg (picture: Tussen Ruimte, 2012)

§ 6.5 Conclusion: indicators for co-housing as urban quality.

This paper outlined different ways of looking at co-housing: through several kinds of categorization as well as in multiple geographical contexts. International comparison reveals the similarities amongst co-housings' intentions, as well as differences of planning and policy context. Recurrent features of co-housing initiatives are:

- Self-management, resident involvement
- Organizational unit overlaps spatial entity
- Mutualisation and collaboration oriented
- Non-speculative, often looking for sustainable lifestyle
- Preferential mixed use and/or mixed income.

Yet whereas co-housing or self-managed housing is increasingly present in the housing discourse, there is little insight in the quantitative performances. So far, the supportive evidence for the urban qualities of co-housing, and its impact on the neighbourhood, has been demonstrated at case-study level, and studies by social studies and humanities, rather than the engineering and design disciplines. There do not need to be doubts about the lived evidence recorded by inhabitants themselves in directories, websites and publications and publications, or even in the case-studies of academics. However as precisely these experiences raise expectations to 'create a better world' (or at least a less wasteful build environment) there is a need to assess more systematically in how this works in practice.

The paper has argued that including planning cultures in the analyses is essential for interpreting the co-housing trend in Europe. First, in order to 'frame, map and measure' the co-housing trend, a 'DNA' of co-housing initiatives needs to be established. Who belongs to the family? Planning criteria can contribute to a closer definition that does justice to local and national circumstances, as it is able to identify similarities in impact while the solutions may vary. 'Mapping and Measuring' through the analyses of planning documents could then provide useful information, for example: What is average number of dwellings and which number is effective socially, for energy smart grids, or otherwise? Which kind of urban areas do they occupy: centrality/suburban/medium size towns/peripheral/rural? How does the m^2/person compare to average housing conditions? What is the ecological footprint in relation to average dwelling types? Which spaces, other than housing are shared: workshop, business, courses, guestrooms, child-play; and in how far do they substitute public facilities?

Secondly, studies on co-housing often refer to cases from different countries, without reference to the different planning- and housing systems in which the initiatives are

operated. Yet these are important influences in the shaping of projects, for example in the role of architects, the potential locations, dialogue and support from local governments, or regulators for tenure. The architectural and urban features of co-housing cannot be adequately understood as a new housing model if such contexts are not taken into account. Analyses from all the fields of planning: urban design and strategic development, as well as engineering and legal regulation, need to be combined to produce adequate understanding.

Furthermore, the co-housing model is relevant for planning and research as an indicator of housing aspirations and the lack of response by the 'classical' housing market. From a planners' perspective, co-housing may be seen as testing ground for the criteria of the demand-side for housing. This leads to the fundamental question of the interaction between spatial and social dynamic: do intentional communities, as a new practice of social cohesion, require new environments or rather a change in attitude and communication? Among the fundamental questions to be answered are: the relations between spatial and social architecture; the dynamics of international knowledge transfer and the role and nature of planning itself. Such questions are profoundly trans-disciplinary, and planning documents can make a major contribution to their understanding

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Part of the fellowship was to organise a conference, which took place in March 2012. The proceedings were published as special issue of Journal of Urban Research and Practice, March 2015, for which I was the editor and wrote the introduction as well as this contribution. The issue further contains eight papers from five European countries, highlighting new research on cohousing in Europe. It was republished as hardcover book by Routledge November 2015: The Re-emergence of Co-housing in Europe (ISBN: 13: 978-1-138-96125-8).

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For this thesis, the table with planning instruments found during the fieldwork was added to the published paper.

§ 6.6 Dutch Planning instruments related to co-housing – Addendum to chapter 6

This section reports on findings that are not part of the published article but belong to the research results that are especially relevant to answer the question into '**what are the institutional challenges?** Co-housing initiatives are a relatively new party amongst the usual stake-holders, and in general the stronger position of end-users at the start of planning, as 'commissioners' rather than 'consumers' does require a re-organisation of the established processes [Kuenzli & Lengkeek, 2004]. The interviews revealed that especially the quality of the collaboration depends to a large extent on the attitude of the people involved. Institutional partners can be housing associations, market parties, and local authorities. The 2004 policy evaluation of CPO policies showed that there was too little knowledge circulating, and the success of Co-housing and CPO depends largely on the responsible councillors. Since, a number of planning instruments have been developed that are summarised in Table 6.2. Strong and weak points are distilled from the range of interviews. Chapter 11, the conclusions, offer further discussion.

INSTRUMENT	*FEATURES*	*MAIN STAKEHOLDER*	*STRONG POINTS*	*WEAK POINTS*
zoning & plot size	micro-subdivision of area into plots with a lean framework of design criteria	municipal planning department	Regulating the relation private-public; allowing for intermediate / buffer zones, mandatory mixed use on ground floor ordinance	Within legal framework of Building Act; can be too prescriptive (NL: too individual)
land-sales contract	Specify quality criteria for example relating to energy performance	Land-owner / municipality	Introduce mixed functions, advance sustainability targets	can be too prescriptive (restricting room to experiment)

Conditional plot sale contract can be issued both by the municipality and by the residents' association. For example: Almere kavelpaspoort Homerus *intends to consolidate general interest, mediating the freedom of design with a bottom-line security for (from) neighbours). BK: regulates the shares of the common land (*mandeligheid*) per contract, including detailed qualitative agreements about car-parking, waste-containers, storage, fencing and the outdoor colour-scheme. In Tubingen,* Baugemeinschaften *have to sign a contract that they will co-develop the inner part of the inner courtyard*

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INSTRUMENT	*FEATURES*	*MAIN STAKEHOLDER*	*STRONG POINTS*	*WEAK POINTS*
selling or leasing to association or cooperatives	selling or leasing to association or cooperatives, and reach agreement about the equipment and maintenance of public space	Municipalities that own the land	More value for money (Example: community land trust; Groene Marke)	Privatizing public tasks and decisions
competition/tendering jury	involve inhabitants in the formulation of criteria, as well as in the selection process Evaluation/ selection committee for competition entrees and plan (together with experts and officials)	Local authority (the 'Tubingen' example)	Direct dialogue and end-users equal position in stakeholder constellation	Assure representation of all population groups, relying on voluntary work, creating 'professional citizens'
yearly self-build fair	Usually weekend fair where professionals hire stands and potential building initiatives can inform themselves of make direct contact	Local authority (example: Almere, strassbourg)	Means to sell land but also part of a communication campaign	May weaken attention rest of year; risk of commercialisation
Convince by fieldtrip	looking both at the result and the strategy (example: Almere)	Any stakeholder involved (preferably all of realisation team);	Feasibility and applicability can be tested immediately	'external borrowings are always subject to internal logics of ownership' [Delpeuch, 2008:61]
local Platform for all stakeholders	to exchange, recognise, formalize & regulate self-development and housing collaboration	Chaired by head of planning or housing department	More continuity than yearly fair, Direct dialogue and end-users equal position in stakeholder constellation	Assure representation of all population groups, relying on voluntary work, creating 'professional citizens'
'IBBA-style'	Facilitate Baugruppen: through shared foundations/ separation wall/ contracting	Housing association with bank and planning department	cost-efficiency	Lower quality, involves income checks

Not strictly a planning instrument, but essential: Financing. The IBBA model was invented and implemented through collaboration amongst the local institutions: 'delayed' loans; making use of existing possibilities for HA, tenure-forms between rental and selling are also applicable for Co-housing

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INSTRUMENT	*FEATURES*	*MAIN STAKEHOLDER*	*STRONG POINTS*	*WEAK POINTS*
intermediate agency	Installed with special task self-managed residential cooperatives (example: WBVG; societé d'attribution et d'autopromotion)	Independent agency	Specialist knowledge, intermediary between stakeholders	Restricted by legal framework of housing associations; real estate is capital intensive
Woonvisie/housing policy document	mandatory for municipalities in the Netherlands	Housing department municipality (usually with regional support)	Bundles knowledge and secures room for (co-)housing initiatives	Few contain a concrete vision on self-development
network of 'co-housing minded municipalities'	Voluntary network for officials to transfer knowledge and mediate between local and national level;	Initiated in France, by the regional semi-public planning agencies CEAU	lobbied successfully for a change of law on cooperative property, issued manuals, introduce standards and so on.	Top down if not working together with the network of co-housing initiatives
flexibility for diversity and density	Urbanist makes framework of different heights and sometimes opening in the block to assure the sun coming in.		Enables Living and working Integration of different needs Social infrastructure	
Reactivation of old buildings	When available on brownfields	NL: Developer Tübingen: municipality	Brings in services quickly for cheap commercial space	
national expert-team (*Eigenbouw*)	Installed by minister of economic affairs, experienced professionals at service of municipal departments	2016: training councilmembers to implement policies and monitor C/PO	Highly experienced professionals become visible and offer advise on proven strategies	Not well-known; involvement of VNG Dutch federation of municipalities? may exclude other experts (standards unclear).
Bonus	When more than quota is realised municipalities receive extra budget	Nat>local	Financial incentive	No land available

TABLE 6.2 Planning instruments relating to collective self-developed housing in the Netherlands

References Planning Perspective

Ache, Peter, and Micha Fedrowitz (2012). "The Development of Co-Housing Initiatives in Germany." In: *Built Environment* 38, no. 3 (July 2012): 395–412.

Biau, Veronique, and Marie-Hélène Baqué (2010). *Habitats alternatifs : des projets négociés ?* Paris: ENSA Paris-Val de Seine, 2010.

Boelens, Luuk, and Anne-Jo Visser (2011). "Possible Futures of Self-Construction: Post-Structural Reflections on Ten Years of Experimentation with (C)PC." In *Making Room for People: Choice, Voice and Liveability in Residential Places,* edited by Lei Qu and Evert Hasselaar, 103–28. Amsterdam: Techne Press, 2011.

Boelhouwer, Peter "International comparison of social housing management in Western Europe" (1999), in: *Netherlands Journal of Housing and the Built Environment*, 1999, vol. 14, no. 3, pp.225-240.

Boonstra, Beitske, and Luuk Boelens (2011). "Self-Organization in Urban Development: Towards a New Perspective on Spatial Planning." *Urban Research & Practice* 4, no. 2 (August 26, 2011): 99–122.

Bresson, Sabrina, and Lidewij Tummers (2014) "L'habitat participatif autogéré en Europe : vers des politiques alternatives de production de logements ?" *Metropoles*, no. Politiques alternatives de développement urbain (december 2014). http://metropoles.revues.org.

Chatterton, Paul (2013). "Towards an Agenda for Post-Carbon Cities: Lessons from Lilac, the UK's First Ecological, Affordable Cohousing Community." *International Journal of Urban and Regional Research*,

Coates, Chris (2000). "Utopia Britannica." London: Diggers and Dreamers Publications

Cooper Markus, Clare (2000). "Site Planning, Building Design And A Sense Of Community: An Analysis Of Six Cohousing Schemes In Denmark, Sweden, And The Netherlands." *Journal of Architectural and Planning Research* 17 (2): 147–163.

Droste, Christiane, and Thomas Knorr-Siedow (2012). "Politics and Cultures of Community-oriented,

Self-organized Housing in Europe – Typologies, Orientation and Motivations." In *CoHousing Cultures. Handbook for Self-Organized, Community-oriented and Sustainable Housing*, by Michael Lafond. Berlin: Jovis-Verlag.

Fedrowitz, Micha, and Ludger Gailing (2003). *Zusammen Wohnen. Gemeinschaftliche Wohnprojekte Als Strategie Sozialer Und Ökologischer Stadtentwicklung*. Blaue Reihe; Dortmunder Beiträge Zur Raumplanung 112. Dortmund: IRPUD.

Fromm, Dorit (2012). "Seeding Community: Collaborative Housing as a Strategy for Social and Neighbourhood Repair." Built Environment 38, no. 3 (2012).

Fromm, Dorit. (2000) "Introduction To The Cohousing Issue." *Journal of Architectural and Planning Research* 17, no. 2 (Summer 2000): 91–93.

Herck, Karina Van, and Bruno De Meulder (eds.) (2009) *Wonen in Meervoud. Groepswoningbouw in Vlaanderen 2000-2010*. Amsterdam: SUN Architecture

Jarvis, Helen (2011). "Saving Space, Sharing Time: Integrated Infrastructures of Daily Life in Cohousing." Environment and Planning 43, no. 3: 560–77.

Krämer, Stefan, and Gerd Kuhn (2009). *Städte und Baugemeinschaften*. Stuttgart + Zürich: Karl Krämer Verlag. wuestenrot-stiftung.de.

Krokfors, Karin (2012). "Co-Housing in the Making." *Built Environment* 38: 3; pp 309–314.

Kuenzli, P., Lengkeek, A., 2004. Urban Jazz. Pleidooi voor de zelfgebouwde stad. uitgeverij 010.

Lejeune, Lucy (2009). "Habiter autrement, du squat à la coopérative d'habitants Entre innovation et transformation sociale." Institut d'Etudes Politiques de Université Pierre Mendès France,. http://www.habicoop.fr/IMG/pdf/Memoire_habiter_autrement.pdf.

Lietart, Matthieu. "Cohousing's Relevance to Degrowth Theories." Journal of Cleaner Production, no. 18 (2010): 576–80.

Locatelli, Daisy, François Desrues, and Jean-Marc Biry, (eds.) (2011) *Guide Pratique de l'Auto-promotion*. Strasbourg: Association Eco-Quartier Strasbourg et CAUE Bas-Rhin.

Parasote, Bruno (2011). *Autopromotion, habitat partagé, écologie et liens sociaux*. Strassbourg: Yves Michel

Poldervaart, Saskia (1993). *Tegen conventioneel fatsoen en zekerheid. Het uitdagende feminisme van de utopisch socialisten.* Amsterdam: Uitgeverij en boekhande van Gennep bv,

Poldervaart, Saskia, Harrie Jansen, and Beatrijs Kesler (2001) *Contemporary Utopian Struggles. Communities between Modernism and Postmodernism.* Amsterdam: Aksant

Ruiu, Maria (2014). "Differences between Cohousing and Gated Communities. A Literature Review*." *Sociological Inquiry*, 84, no. 2 (May 2014): 316–35.

SEV (2006) *Bewoners aan zet. Vijf jaar experimenteren met particulier opdrachtgeverschap*. Stuurgroep Experimenten Volkshuisvesting, mei.
Tummers, Lidewij (ed) 2012 "*Self-Managed Cohousing: Born out of Need, or New Ways of Life*." Proceedings of Self-Managed Cohousing: Born out of Need, or New Ways of Life. 12-13 March in Tours: Le Studium & Université François Rabelais. Available at *http://alter-prop.crevilles* dev.org/ressources/items/show/1267.
Tummers, Lidewij. "Collectively Commissioned Housing: New Urban Qualities through Residents Self-Management." In *Making Room for People: Choice, Voice and Liveability in Residential Places*, edited by Lei Qu and Evert Hasselaar, chapter 7. Techne Press, 2011.
Tummers, Lidewij. "Co-Housing: Pioneers of Eco-Engineering.": paper presented at the annual conference of ENHR, Tarragona 2013. http://www.enhr2013.com/paper-submission/list-of-papers/.
Vestbro, Dick, ed. (2010). *Living Together- Co-housing Ideas and Realities Around the World*. Stockholm: Royal Institute of Technology division of urban studies in collaboration with Kollektivhus NU.
VROMraad (2009) *Wonen in Ruimte En Tijd Een Zoektocht Naar Sociaal-Culturele Trends in Het Wonen*. Den Haag: VROMraad
Williams, Jo (2005):. "Designing Neighbourhoods for Social Interaction: The Case of Cohousing." *Journal of Urban Design* 10, no. 1 195–227.
Woude, Henk van der. *Community Architecture in Nederland*. Bussum: Toth, 2012. http://www.forum.nl/diversiteitinwonen/Community_Architecture.

7 From self-build to custom-build

Mapping forms and impact of co-housing in the Netherlands, 1990-2015

Summary

This chapter traces the recent history of collective resident-led housing in the Netherlands, introducing a typology of co—housing generations. Chapter 4 introduced Dutch energy- and housing policies leading to the national self-building policy. Chapter 6 discussed how planning criteria can play a role in defining typologies or categories. This chapter focusses on Municipal and market responses and emerging 'hybrid' forms expanding the typology of resident-led housing. The study outlines the recent history of DIY co-housing in the Netherlands, and provides examples of at market absorption and emerging hybrid forms of DIY and co-housing.

Earlier versions of this chapter were submitted to *Housing Theory and Society* (2016, rejected for not being international in scope) and*: Journal of Housing and the Built Environment* (rejected for lacking theoretical framework). The paper has also been presented at several conferences, where its (intentional) descriptive and practice-oriented nature was welcomed. It will therefor be published as open access.

§ 7.1 Introduction

Traditionally Dutch planning is corporate- and policy driven: until 2005, the Netherlands had the lowest percentage of self-developed housing in Europe [RIGO 2005]. In 2000 a national policy was adopted achieve a minimum 30% share of self-development in housing production. However, Policy evaluation in 2006 showed that not a single municipality had reached this figure, and that this stagnation could not be explained by lack of demand [SEV 2006]. The analyses suggest a need for planning culture to change [Roetgerink, 2006]. Typically, developers negotiate a contract with municipalities containing a set of regulations, specifying the built volume, tenure types and infrastructural requirements. Seyfang & Smith [2008] report

similar conclusions for the UK: Self-initiated green builders have a different discourse, practice and governance than volume buildings, which hinders mainstreaming.

Although additional planning instruments were issued (see Table 6.2), the percentage of 'self-build' housing remains below 15% of yearly housing production [CBS, 2015]. The category 'third/private development' was added to 'housing associations' and 'commercial development' housing statistics only in 2009. The statistics are based on the formal applicant for building licence, which obscures the many forms of collaboration and partnerships that the realisation of housing involves. During the last decade, there have been profound changes in housing provision, which can be related to increased self-organisation in the field of housing. For example: the building industry is increasingly diversifying its 'product' or collaborating with residents' housing initiatives; DIY ('self-build') housing has become the basis for urban development, notably in Almere, following the example of Tübingen [Tellinga, 2010], self-developed housing has also become part of strategies for gentrification, for example in Rotterdam [Sour, 2009] and Berlin [Droste, 2015; Ring, 2014]. This is not to say that they respond adequately to the aspirations of inhabitants. As happens in 'greenwashing'[55], market parties may adopt the grass-root discourse while offering a semi-industrial housing type. From this dynamic, a diffuse set of terminology is circulating, which frequently leads to comparing oranges and apples.. From a study of 'self-building' in the UK, Benson concludes that:

'Conceptual clarity about the terms, products and processes that are part of a diverse self-procurement landscape is timely and necessary if the industry is to be recognised as providing a significant alternative for new housing.' [Benson, 2014: 3].

The entrance of non-professionals in residential development meant a rupture with Dutch planning culture based upon collaboration between professional parties without structural involvement of end-users: residents, instead of being at the end of the production line as 'consumers' or 'beneficiaries' of ready-made housing, now become commissioners[56]. Local authorities that were used to negotiating with (large) commercial parties now had to respond to households building individually.

55 marketing to make houses or products seem sustainable or ecological without fulfilling transparent criteria to assess environmental impact

56 this is closely related to the (Western) welfare state: In many countries owner-occupant-building for individual units is a well-established way of housing provision and for large parts of the world, selfprovision is the only option

Kuenzli and Lengkeek [2004] suggest that the order of the planning process needs to be reversed, placing 'clients' at its origin rather than at the end as 'consumers' or end-users. In practice, the transition from predominantly top-down towards collaborative, user-centred planning is a gradual and non-linear process [Boonstra, 2015]. The aim of this paper is to unravel this reciprocity and to propose a terminology of typologies for the range of collaborative housing that is emerging out of the interaction between self-organisation, market and governance. (see Table 3).

The tension between grassroots mobilization and public steering of the common interest has gained new interest in multiple academic disciplines, amongst which urban studies [Boonstra and Boelens, 2011]; political science [ref], economics [Ostrom, 1999]; housing studies [Franklin and Marsden, 2014] and planning [Healey, 2003]. Based on fieldwork in the Dutch housing sector, this chapter looks at the development of collaborative housing in relation to the different planning and housing regimes.

§ 7.1.1 Outline

The chapter first introduces the methods and empirical material. This is followed by a practice-oriented framework used to understand the emerging forms of co-housing. This framework is also applicable in other national contexts, because in Europe, a wide variety of co-housing projects can be found depending on ambitions, budget, and location, articulating a demand the market was not catering for.

The findings suggest that planning has started to cope with the challenges that co-housing presents. The conclusions argue that *collective* initiatives for housing projects comprise added values for urban policies, as well as presenting more challenges to planning systems than individual self-builders do.

§ 7.2 Approach

§ 7.2.1 Why study collective self-developed housing?

In the Netherlands, co-housing has been developing since the 1970s, generating a diverse landscape of housing solutions initiated and operated by resident associations. Residents' involvement during the whole life-span of the project is a key ingredient.

Many of those initiatives include a common space or shared facilities such as bicycle sheds, playgrounds and laundries, guest rooms and other functional infrastructure. This sharing is voluntary and not commercially exploited [Jarvis 2015].

Until recently, co-housing was considered to cater for a small number of specific groups, but today it can no longer be considered a marginal phenomenon [Wohnbund 2016; Tummers, 2015a; Krokfors 2012; Fromm 2000]. Rather than 'resisting the system', as did for example in the squatters' movement, co-housing initiatives form partnerships such as with housing associations to provide financial or administrative back-up, thus 'diluting' the amount of self-organisation.

Since 2000, the formal Dutch term is (*Collectief) Particulier Opdrachtgeverschap*, (CPO) which literally translates as '(collective) private client'. This translation is confusing in the European context where the private client has been traditionally more present in the building industry than in post-war Netherlands [Rigo 2005]. The shorter '*zelfbouw*' [self-building] is not satisfactory, because the actual building is done mostly by professional contractors. '*Bouwen in eigen beheer*' [BIEB, self operated / procured building] is more adequate. This section uses the increasingly applied umbrella term 'collaborative housing' or co-housing [ENHR 2016; Tummers 2016; Krokfors 2012]. This paper aims to create conceptual clarity on how to classify housing initiatives as 'self-organised' or 'institutional'.

In the Netherlands 'self-organization' has been politically embraced as 'participation'[57] or 'Do It Yourself' (DIY) society [Uitermark, 2015; Lans and Hilhorst, 2013].

Seyfang and Smith, found that co-housing offers important learning experiences because '*in contrast to mainstream business greening, grassroots initiatives operate in civil society arenas and involve committed activists experimenting with social innovations as well as using greener technologies*' [Seyfang and Smith, 2008: 585]. This is confirmed by the Dutch cases, although not all co-housing initiatives are 'green pioneers' as the typology outlined below will demonstrate. Co-housing is an example of "*how creative practices of actors and relevant social groups give rise to a search for new solutions to perceived problems, resulting in new planning instruments and systems*." [Servillo and van den Broecke, 2012:54].

57 In de 'Troonrede 2013' [Dutch state of the union spoken by the King] the '*Participatiemaatschappij*' was introduced as follows: 'Everyone who is capable of doing so, we ask to take responsibility over their own life and environment.' http://www.elsevier.nl/Nederland/nieuws/2013/9/Troonrede-2013-volledige-tekst-1365922W/ gevraagd verantwoordelijkheid te nemen voor zijn of haar eigen leven en omgeving' (Ministerie van AZ, 2013b).

§ 7.2.2 Method and empirical material

Ten projects, representative of the range of projects realised between 1990 and 2010 in medium-size Dutch towns were selected for in-depth analyses. The National Expert Team self-building[58] qualified these *collective* self-building projects as: 'micro-labs for participative planning and affordable, low-carbon building' [*Expert-team Eigenbouw*, 2014]. The documents produced during design and building phase and project visits formed the primary sources for documenting the projects. Although in most cases the archives were not complete, they provide a reliable insight in the major discussions, visions and bottlenecks of the initiators. Between 2012 and 2015 around thirty semi-structured interviews were held with project initiators, professionals and public officials related to these projects and local co-housing policies (see table 1). To map the institutional and policy framework of the period, the paper draws on secondary sources such as policy documents, as well as academic references. For technical comparisons, it has looked at specialist industry publications, including online videos, both by builders, and developers.

Most co-housing groups are part of a network or federation, and there is active sharing of information and knowledge. Such 'subjective' sources have been evaluated with caution, verifying for example interviews with planning documents and policies in urban development programmes or housing strategies incorporating co-housing.

FIGURE 7.1 'PO' / Individual self-development, IJburg (Amsterdam, NL) (foto: Tussen Ruimte, 2007)

FIGURE 7.2 'CPO' / Collective self-development, IJburg (Amsterdam, NL) (foto: Tussen Ruimte, 2007)

58 installed by the Dutch Minstry of Economic affairs, responsible for housing in 2013 as one of the planning instruments

POSITION TITLE/ROLE	LIST OF INTERVIEWEES
Cohousing residents / initiators	CPO selfbuilder Co-housing senior activist Co-housing project members (see field studies)
CoHo professionals	*Self-build project manager* Procedural consultant *Social facilitator* Sociologist/academic Strawbale and self-building specialist
Architects	CPO expert and initiator Sustainable building specialist Project planning and design Cohousing network board member Cohousing group founder and resident
Developers	Not for profit developer Commercial developer '*Klushuizen*' agency
Housing Association	*Self-build project manager* Procedural consultant CPO resident and specialist
Supportive infrastructure	Governing board member of cohousing networks Director of HA NGO / special interest office collaborator
7 *Municipal*	*consultant* Urbanist and transition manager Councillor

TABLE 7.1 Overview of Dutch interviews that inform this research

§ 7.2.3 Framework

Seyfang [2008] proposes the term grassroots innovations' as an analytical framework that understands 'community-led initiatives for sustainable development as strategic green niches with the potential for wider transformation of mainstream society'. The 'niche innovators' are framed by the established institutions, but also have an impact on them. For this reason, a double perspective has been adopted to discuss the emerging phenomena in Dutch housing provision: first, conceptualizing self-organized housing as 'grassroots innovation'. Second, the response from institutional planning, especially local authorities. Combining the perspectives of niche-development with that governance of helps to understand the gradual impact of co-housing in Dutch planning practice (Table 2).

Seyfang and Haxeltine [2012] distinguish three ways in which niches can influence the regime: by replication, growing in scale and through ideas translating into the mainstream settings. the field-study reflects these forms: First, realised co-housing projects lead to new initiatives, in other words 'replication'. Second, institutional partners may facilitate development by making plots available for (individual) house building, providing subsidies or professional assistance. Finally, municipalities use co-housing–based strategies for urban and brownfield development, and 'hybrid' forms of housing production, in which the institutional partners play a significant role and adapt their structures.

Based on a survey in several major German towns, the *Wuestenrot* Institute concluded that municipalities developed different strategies to respond to the growing demand for participation. The report reveals three types of attitudes of local government: local authorities may act as the key actor of projects; a 'tandem' model emerges, which enables a strong partnership between the administration and inhabitants, in particular through support given to the projects by the municipality; or the town facilitates the initiatives of groups of residents (Krämer & Kuhn, 2007).

The typology was constructed following planning criteria, such as tenure, land-use and morphology [Tummers, 2015b] How this framework shaped the design of a co-housing typology in the Netherlands related to its institutional context is summarized in table 7.3, page 165.

§ 7.3 Housing policies: introducing home-ownership by self-development

In the Netherlands planning policies are implemented through provinces and municipalities, but planning for housing is to a large extent negotiated between HAs and local authorities. The emergence of self-housing must be seen against a backdrop of institutional, large-scale, housing provision established to cover for the shortages in the Post-war period [Ouwehand and van Daalen, 2002]. Consequently, the majority of units were rented out by housing associations (HA), semi-public institutions tied to a wide range of rules concerning development, maintenance, distribution and allocation. In the 1970s and 1980s, budgeting followed strict norms related to subsidies, both to the institutions and as individual housing support. In line with policies of decentralization and liberalization a more flexible National Building Act (*Bouwbesluit*) was introduced in 1992 and all HA's were privatized during a large-scale operation that exchanged outstanding loans against pay-off of subsidies: the so-called

'*Bruteringsoperatie*[59]' 1994-2000. This was followed by a wave of merging that produced large-scale HA's who formed their own development agencies competing with commercial investors.

In the same period, planning policies regulated housing following the 'compact city expansion' model (VINEX) [Cammen en de Klerk, 2012; Roo, 1998]. Private developers held strong positions of land with rights to buy, and few locations were opened to self-builders [Dammers and al, 2007:6]. Planning conditions were further characterized by a general guideline for 30% 'affordable' housing and negotiable local requirements. Policies for sustainable building and energy-efficiency had an experimental character, except the gradual introduction of EU-agreed energy-performance norms [Beuken, 2012].

Against this background the idea of the 'participation society' as an alternative to the welfare state was introduced [Uitermark, 2015]. Increasing the share of self-developed housing fitted this line of thinking, and in 1998, Parliament demanded the Dutch government to double the share of self-developed housing production (*Particulier Opdrachtgeverschap*, PO) to 30% in 2005.

VROM lowered the CPO targets in 2006 but at the same time intensifies its request to municipalities: "*the human factor has disappeared and housing production has become uniform, allowing too little room for choice*[60]" [VROM 2005:4 authors' translation]. The Ministry also recognised that "*Collective building does fit Dutch planning culture because it is based on serial production*" rather than individual (semi-) detached houses. To accelerate the adaptation of local planning structures for self-procurement, the ministry issued a 'handbook' and allocated €42.5 million to subsidise municipalities that performed well on self-development. After 2011, VROM was abolished and housing became the responsibility of the Ministry of Internal Affairs, which installed a 'National Expert Team Self-building' (NET-self-building) to assist municipalities in their working with citizens[61]. In 2015, the team launched a course for officials from Municipal planning departments to disseminate new ways of working.

59 *Wet balansverkorting geldelijke steun volkshuisvesting* [Housing deleveraging Act] 31 May 1995 http://wetten.overheid.nl/BWBR0007419/2008-06-13/0/ (accessed 26 June 2016)

60 "de factor mens is uit het bouwproces verdwenen. De laatste jaren groeit de kritiek op de eenvormingheid en het gebrek aan keuzevrijheid die met deze manier van bouwen samenhangen" (authors translation of original text)

61 http://www.rvo.nl/onderwerpen/duurzaam-ondernemen/gebouwen/woningbouw/nieuwbouw/eigenbouw/expertteam-eigenbouw (accessed 12 September 2015)

Some cities went beyond instrumental facilitation, and incorporated self-building in urban development strategies. Two examples: urban extension and inner city development, of strategies that surpass the initial slow take-off will be detailed in section four. Market response to the National Policy was slow, but the financial crisis revived the interest of the building sector in small-scale developments, formerly seen as too complex to be profitable. Section five looks at this recent acceleration.

The next section first offers a typology of resident-led initiatives.

§ 7.4 Co-housing forms in the Netherlands

This section maps diverse forms of resident-led housing in the Netherlands, captured in the international term co-housing forms. Since the 1980s, five types of resident led housing initiatives stand out:

1 *Centraal Wonen*, (CW) the Dutch variety of 'Cohousing', a model that emphasizes sharing and community building [Krokfors, 2012; www.cohousing.org]. Several clusters of each 5-8 individual units around a shared kitchen are grouped to form the whole project, around a common garden and a function room. CW- projects all are owned by housing associations and rented under a social housing regime. The residents' association is responsible for new members, maintenance, garden and so on. The Dutch national organization currently has a membership of 54 projects, estimated to be one third of existing co-housing [www.lvcw.nl accessed February 2015].

2 *Zelfbeheer*, projects rooted in the squatters' movement of the 1980s and re-using industrial heritage as collectively self-managed accommodation. Examples are numerous, also outside Amsterdam, with flagships such as: *Poortgebouw* Rotterdam, a former harbour office, *Hotel Bosch*, Arnhem or *De Wilde Wereld,* a former school in Wageningen [Qu and Hasselaar 2011]. Tenure varies from cooperative to rental and ownership often including cultural centres and creative or artisanal industry.

3 *Second generation co-housing*, initiated in the 1990s with the main objective to reduce the ecological footprint of housing. Sustainability is seen as a combination of social, technical and economic elements and multiple goals are set, such as: a mix of income, household-type and waste- or water recycling within the project. They are predominately located in urban extension ('VINEX') areas of middle-sized towns, for example 'the domestic garden' (*de Heemtuin*, Den Bosch); 'the green roof' (*het Groene Dak*, Utrecht); 'the green common' (*de Groene Marke*, Zupthen); or 'the orchard' (*de Bongerd*, Zwolle). The projects' age are by now on average 30 years, and more followed,

often initiated by households on the waiting lists, for example: 'the Cherry-garden' (*Kersentuin*, Utrecht) '*Meander*' (Zwolle) or 'Green Common' (*Groene Mient*, Den Haag).

4 *Collective Private Commissioning* (CPO)' following the German model of *Baugruppe* [Ache and Fedrowitz, 2012]. In 'CPO' residents act as collective client, not necessarily forming a 'community'. Whereas co-housing has a strong component of collective action in the administration and maintenance of the projects, the projects are primarily geared towards home-ownership. CPO initiators or participants appreciate knowing the neighbours through the building process, but emphasize the possibility of developing individual housing needs (custom-made housing) and more 'value for money' eliminating developers' margins [SEV 2006, figure 7.3] [62].

5 *'eco-villages'*, proposing to create communities that are to a large estent self-sustaining. The first example, and special case because of its larger scale, is *EVA* Lanxmeer, a cluster of projects in a water-winning area[63]. Other initiatives include re-use of sites of de-centralised institutions or former airports. Eco-villages build on a holistic concept, redefining notions such as 'value' and 'ownership' and applying 'green technology' as well as new forms of governance. Eco-villages also profile themselves as centres for knowledge development and education, connecting to the global eco-villages network GEN[64].

FIGURE 7.3 Shared space in CPO Terbregse Rotterdam (picture: Tussen Ruimte, 2007]

62 See for example: http://www.natrufied.nl/live/housing-for-musicians/ http://www.opmaat.info/projecten/hof-van-heden.html http://www.vanbergenkolpa.nl/en/46_cohousing_neigbourship.html (accessed June 2015)

63 Culemborg http://www.eva-lanxmeer.nl/ (accessed 25 November 2015)

64 http://ecodorpennetwerk.nl/ (accessed February 2015)

TYPOLOGY / DUTCH TERMINOLOGY	TRANSLATION/DEFINITION	CHARACTERISTICS
(A) Centraal wonen	*Cohousing* Following the international co-housing model: see www.lvcw.nl	First generation 1980s; community-building is the central factor. 6-8 households share kitchen and other everyday; these groups cluster into larger projects with common facilities and management. Often in partnership with housing association (see: *zelfbeheer*)
(B) Zelfbeheer	*Self-management* The residents do not own the premises but form an association	Numerous projects in large cities, and in other regions for which WBVG is a partner. Mostly renovated or re-used complexes (often former squats)
(C) MW²: Mens en Milieu vriendelijk Wonen en werken	Human and Environment-friendly living and working	Newly build individual houses around common garden with shared spaces and high environmental ambitions.
(D) Woongroep voor ouderen	*Community for seniors* individual units with shared space and facilities	Collectively managed without structural institutional interference after building phase, but within standard rental procedures
(E) Eco-dorp	*Eco-village* Larger scale initiatives that aim for holistic renewal: energy-transition, food-production and so on.	Movement since 1980s has regained momentum through the CPO-policies and the availability of brownfield sites such as former airports or institutions
(F) Collectief Particulier Opdrachtgeverschap (CPO)	*Collective Private Client* (CPO) Collective self-development, equivalent of *Baugruppe* (building groups)	predominantly individual home-ownership, often during design stage common building parts, parking, playground or such are decided and remain in co-management after building

TABLE 7.2 Forms of resident-led housing in NL

§ 7.5 Local governance response to C/PO policies

The addendum to chapter 6 presented several instruments used the first stage of the self-building policy to frame private building initiatives, a selction of whic is discusseed further in the following sections.Land policies are (evidently) key, and can include price as well as quality regulations:

– Some municipalities were able to assign areas where individual households could acquire a plot and build, rather than buy a finished house from a developer. Such plots were sold with a 'building envelope', a contract specifying the max allowed building volume, to counter urban fragmentation.

– Catalogues were published to bring examples of 'Architectural quality' to the future clients, amongst the first Waterrijk, part of *Nesselanden*, a VINEX location in Rotterdam[65].

– Leiden municipality asked a high price per m^2 for plots in order to stimulate high density in brownfield development New Leyden. The city facilitated combined Collective PO for car-park construction and overall architecture, with individual PO for the houses[66].Following a successful initiative of local young people in 2005 with the planning authorities of small town Casteren[67], smaller municipalities, in peripheral areas with shrinking populations offered larger plots or cheaper land to attract or retain young buyers.

– To make self-development accessible for lower incomes, guarantee or anti-speculation contracts (*MGE, Koopgarant*) were being used in inner city development.

§ 7.5.1 New urban development based on self-building: Almere

The city of Almere, which was created from 163 on a new polder, owns all the land suitable for development. This made it easier to launch an operation that breaks with the commercial logic of urban development (Duivesteijn and Tellinga, interview 2012). Faced with the task to accommodate the overflow of Amsterdam housing demand, an urban extension for approximately 3000 units was planned: the so-called 'Homerus kwartier'. The development strategy was inspired by the Tübingen urban regeneration project based on *Baugruppen*[68] [Krämer and Kuhn, 2009; interview 2012]. It distinguishes a central area, where shops and flats are attached to a public parking building, and an outer ring for individual lots with parking on own land, organised around differend thematics such as 'urban' or 'ecological' living (figure 7.4).

65 http://www.architectuurguide.nl/R-dam-Nesselande-Waterwijk-rotterdam-plangebied-bouw-land-wonen-bij-water-351.html?language=_L1#/351 (accessed 6 August 2015)

66 http://www.nieuwleyden.nl/ (accessed 6 August 2015)

67 http://www.casteren.net/Page.aspx?id= (accessed 6 August 2015)

68 http://tuebingen-info.de/index.php?id=812&sav_library=908e661515b0012103663&cHash=e34fcc3b8f-19cb4f5a18175f1bad2c68

In 2006, the programme "*ik bouw mijn huis in Almere*" ("I'm building my own house in Almere") was launched with a 'land trade fair' and a design competition[69]. Future inhabitants could apply for a plot, and purchase individually or collectively with contractual obligations specifying minimum construction requirements, but allowing wide flexibility in the rest of the project. Developers could also purchase a plot, provided they worked directly with future inhabitants to design the project. The launch of the program was a success and the "land trading fair" became an annual event for promoting the participative approach and for holding meetings between town officials, residents and people envisaging a move to Almere new town.

FIGURE 7.4 Homeruskwartier, masterplan for small-scale development [source: Almere Municipality, 2017

69 http://www.ikbouwmijnhuisinalmere.nl/ (accessed 12 September 2015)

The first individual construction started in November 2008 and at the beginning of 2009, 300 plots were sold in the *Homerus* district; on which 50 houses were already built. Also in January 2009, the program, "*ik bouw betaalbaar in Almere*"[70] (IBBA) was launched on 26% of the plots, directed at households with lower incomes and in particular at one-parent families or households who depend on one income. The aim of the IBBA program was to encourage access to home-ownership for households whose income is above housing benefit criteria but too low to take out a full mortgage, and to enable them to invest step-wise (interview town-planning department 2012).

In 2012, approximately 1,200 houses were occupied or under construction. In 2013 the 500th IBBA house was delivered. On this occasion Duivesteijn emphasized that financial support is not the only prerequisite for successful self-development: professional support, inspiring examples and accessibility of the planning department enhance the interest and success of the initiative[71].

The first co-housing project began in April 2009 and consisted of 22 houses built around a shared garden intended for elderly people seeking housing with nearby services. *IBBA* represents a 'hybrid' form of co-housing, since on technical grounds it works like Baugruppen but is institutionally initiated. The municipality forms groups of households to design clusters with common building elements (such as foundations or separation walls), resulting in substantial savings for each household.

Another hybrid form of co-housing is, the competition for professional developers to propose small-scale housing, designed directly with its future residents. An early example is Almere Poort. In 2007 developer Oostmeijer and Van Bekkum Groep won the competition, but it took until 2011 before the *Ithaka* project was started and realised in 2014[72]. Ithaka counts one hundred residential units (twice the amount of average co-housing initiatives in the Netherlands) which are situated around a common courtyard, which includes an ecological swimming pond and is managed by the residents. So far Ithaka is the only project that closely follows the Tübingen Model, receiving high accolades for its quality [van der Woude 2013].

70 "I'm building my own house at an affordable price in Almere" [http://www.ikbouwbetaalbaarinalmere.nl/ last accessed 25 January 2015]

71 press notice, IBBA see also http://zelfbouwinnederland.nl/nieuws/eerste-paal-500ste-ibba-woning-almere/8 (accessed 2 December 2015)

72 http://www.architectuurgidsalmere.nl/ALMERE/ITHAKA (accessed 12 September 2015)

The key to the success of Almere's strategy was the decision of the city council to open its planning practices for a prominent role of citizens. This necessitated a thorough overhaul of the urban planning services: local government officials were trained to work directly with city dwellers and planning and regulation techniques were reviewed (Tellinga, 2010).

Gentrification based on self-building: Rotterdam

The success of Almere, but also the resistance to urban renewal through large-scale demolition, and failure to attract the creative class through gentrification strategies, led several larger towns to introduce self-development for brownfield sites. Rotterdam was the first town to experiment with so-called klushuizen, 'repair-houses' [Hulshof, 2014; Sour, 2009]. A block of derelict houses in urgent need of 'repair' (renovation), located in an area marked by poverty and accumulated social problems was purchased by the municipality and resold at a low price with a contract that obliged the buyer to start renovation works within the year. The initial project was highly successful and generated much publicity. The repair program was then expanded to other impoverished neighbourhoods and stagnating urban renewal areas. The units may be scattered individual houses or apartments belonging to a row or block. In the case of shared building components (such as loadbearing walls in typical block or terraced housing or roofs and staircases in apartment buildings), buyers form an association that negotiates with the municipality, as well as act as formal client for works on common structures or infrastructure (entrances, storage, parking, gardens, sewage and so on). To counter speculation, the contract obliges buyers to live there for at least 3 years before it can be sold on. The municipality estimates renovation costs and deduces those from the market value to determine a selling price. Buyers are free to contract or self-build, but the contract of purchase includes for professional assistance with group decision-making, obtaining building licence, and sometimes (co-) organizes structural repair, especially when it concerns the foundations. Rotterdam holds annually tenders and has installed a special office to facilitate the repair-house buyers. The repair-houses strategy in effect managed to retain and attract a segment of population that was underrepresented by offering affordable room for their families and creative practices [Sour 2009]. In 2014, Platform31, the national forum for governmental innovation programs, has started an experiment together with some of the larger housing associations for job houses on rental basis.[73]

73 platform31.nl/klushuur, (17 september 2015)

15 Klushuizen Oude Noorden

Het motto voor dit project is: doe het lekker zelf! Toch helpt Woonstad Rotterdam de klussers. Onder begeleiding van een architect en een vergunningencoach kun je immers je eigen droomwoning realiseren in een wijk die zich ontwikkelt tot 'the place to be': het Oude Noorden. Wees er snel bij! Van de 15 kluswoningen in de Bloklandstraat en de Louwerslootstraat, staan er nog maar enkele te koop. Volg de ontwikkelingen van dit project en de klussers op Facebook.

KOM 21 JUNI NAAR DE OPEN DAG VAN 10.00 - 13.00 UUR IN DE BLOKLANDSTRAAT!

FIGURE 7.5 Klushuizen, urban repair strategy originating in Rotterdam [source: Woonstad 2014]

PERSPECTIVE NICHE>MAINSTREAM: *TYPE OF GOVERNANCE*:	REPLICATION (PROJECT-BASED)	UP (OR: OUT-) SCALING (ADDITIONAL INSTITUTES)	MAINSTREAMING (INTEGRATING AND ADAPTING EXISTING INSTITUTES)
Steering/directing	Policies/programmes responding to co-housing initiatives; or replicating coho model in other policies,	policies to increase number of co-housing initiatives	policies to integrate co-housing initiatives in planning practice,
	For example: Co-housing for seniors; 'building envelope', anti-speculation	for example: 'Klushuizen' and C/PO in gentrification	for example koopgarant, urbanism; IBBA
Co-creation /partnership	Institutional support for co-housing initiatives,	Institutional partnership for co-housing initiatives; supportive infrastructure,	Institutional initiatives for co-housing groups/ projects,
	for example: HA as back-up resp. real-estate owner; special land-price vs conditions	for example WBVG, Mediators *(see chapter 10)*	for example Building firms offering Cas-co-woningen (solids)
Facilitating (at distance)	Land allocation for resident-led co-housing initiatives	Programmes enabling co-creation of co-housing,	Recognition of co-housing as typology and res ass as partner,
	Catalogues, for example Co-housing networks	for example Municipalities giving out plots; Developers integrating pioneer project	for example New law on tenants coops; NET-self-building

TABLE 7.3 Overview governance instruments to relate co-housing to urban strategies.

§ 7.6 Market response to the C/PO policies

§ 7.6.1 Builders and developers

A survey commissioned by branch organisation *Stichting RRBouw*, entitled 'Self-building is a Market for Contractors' confirmed that the demand for self-development exceeded the offer [Ham and Keers 2011: iii]. The authors signal that data are available only at national level, whereas demand and typology can vary considerably form one region to another. For example: the southern provinces (on the Belgium border) traditionally have higher shares of self-building. In the first stages of the self-building policy, smaller communities responded more than larger cities, but this balance tipped when co-housing became part of gentrification strategies. Ham and Keers advised contractors to widen their role and act as advisors for building groups, offering serial (prefab) produced structures that allow for individual solutions per household (*Casco-bouw*, or *Casco-woning*: see table 7.4).

Ten years after the introduction of the C/PO policy, project developers are increasingly offering basic units with optional finishing, thus combining the advantages of serial production with individual choice. This includes re-use and refurbishment of characteristic or monumental real estate. The re-use of old buildings has received an impulse through the project '*Karakterpanden*' ('characteristic real estate'), that aims for 'Housing+ (the plus indicating joined activities)' and states that 'collectivity and self-management are self-evident'[74] thus building on the discourse of the resident led initiatives. These forms of 'CPO-light', marketed as 'a la carte' or 'self-development' target young urban professionals who want some choice, a sense of community but no troublesome planning process. There is however an intrinsic tension between profitable parcellation of structures (whether new or historical *casco's*) and user-qualities (Textbox 1). Several of the interviewees confirmed that the dissatisfaction with the mainstream housing quality has been one of the driving factors for the increased interest in self-managed housing. Market responses tend to adapting the 'product' offering a custom interior in a standardized structural frame. These developments recognise resident associations as additional planning partner, but do not change the stakeholder constellation. The conclusions Benson draws for the UK are also applicable to the Dutch situation: *'Measures need to be taken to make sure that Custom Build does not just become another route for private investment in the property rental market.'* [Benson 2014: 3]

74 http://www.karakterpanden.nl/ (accessed 23 August 2015)

TEXTBOX

CPO-LIGHT', MARKETED AS 'A LA CARTE'

The bottom line are the Building Act requirements, while the aim is to divide in a maximum of sellable units. The options for flexible use, and optimal conditions for ventilation and other utilities, are often more limited in scope than the blanc 'casco' plan suggests. Figure 7.6 illustrates this risk of producing low-quality housing.: the plan contains little to no possibility to create separate kitchens with daylight. ANother example is: Ballast Nedam, "woonexpress" (living express). [see: http://woonexpressnieuwdelft.nl/woonaanbod/]

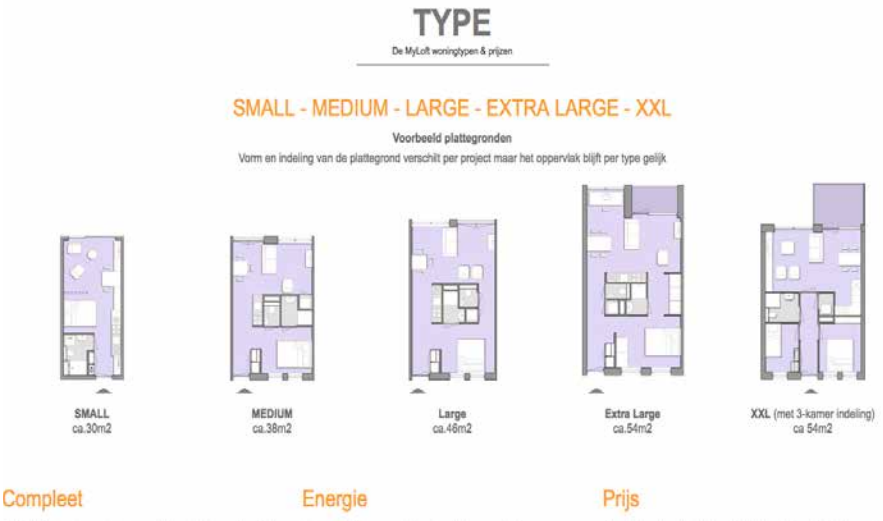

FIGURE 7.6 Example of 'CPO-light' planning proposal [source:www.myloft.nl]

The RBB survey sees a special role for contractors to give insight into financial consequences of design and engineering decisions. It emphasises the importance to offer price guarantees at an early stage. Similar findings come from the *Baugruppe* experiences in Germany, where contrary to the Netherlands architects are responsible for contracting (and thus price-negotiations).

Market-based developers also perceive a strategic interest for co-housing in area development plans. Some area developers see small-scale alternative housing projects as useful pioneers in brownfield revitalisation, provided a strong planning concept or urban planner oversees the overall quality: "*The initiative has made the point of departure for the plan, rather than design-driven planning principles. In return, the developer mediates between initiative and municipality who often feels uncertain about private individuals*" [interview 28 October 2015]. One example is the development of Zutphen railway station area, where an initiative of local inhabitants for 'collective independent housing in the third phase of life' approached the municipality, who handed it over to the developer. The area is now (2015) in the process of being built but after 8 years of negotiating with planners, the municipality, banks and builders, the cooperative of co-housing projects is still not sure about the financial vialbility of its proposal[75].

§ 7.6.2 Housing institutions

Collaboration between resident groups and larger 'institutional' partners can be successful, but also encounters numerous difficulties. Some examples from the fieldwork illustrate this variety:

The project *Kersentuin,* for example, had to wait several years before building works could start, because the municipality modified the urban plans for Leidsche Rijn halfway through the development process [Interview 2012, VROM 2005]. Furthermore, collaboration with external actors might limit the design ambitions of residents by imposing restrictive technical norms, functional or aesthetic requirements. In Zwolle, the planning department helped find a suitable location for *Meander* but did not allow vegetation roofs because of the required architectural style for the area. Often an external mediator is needed to keep the process from deadlocking. Housing Associations (HA) in particular (with some exceptions) tend to display conservative, risk-avoiding attitudes [Sour 2009:49]. The ideas for innovative environmental materials of an early project in Haarlem were not accepted by the HA for lack of certification or guarantees. In other instances, the HA has welcomed experimenting groups, especially when these participated in subsidised sustainability programs [SEV-NOVEM 1998, example Groene Marke].

75 accommodating different generations and price-levels [*Ubuntuplein* various project documents 2015]

Moreover, HAs are bound to an extensive set of regulations and in the last years were subject to policies aiming to resolve tensions on the housing market. While national government on the one hand encourages citizens to take responsibility for their environment, it limits the possibilities for funding by tightening mortgage and rental regulations. Yearly the ministry defines minimum rental increases and obliges housing associations to sell a fixed percentage of their stock [Housing Act 2015]. Self-managed projects in partnership with a HA are confronted with the consequences, for example when a member is moving out, the unit may be sold or the rent is raised. As a consequence, residents that have arrived at different times occupy similar units under different conditions [Interviews 2012, 2015]. Despite its high degree of involvement in the projects' management, the resident associations have to renegotiate, in order not to lose the key characteristics of the projects' success, such as selection of co-residents, involvement in garden management and accessibility for different income groups. However, possibilities for independent operation are limited in the current regime.

§ 7.6.3 Supportive infrastructure

Because collaboration with institutional housing providers and local authorities depends to a large extent on the goodwill and skills of individual account managers, an alternative supportive infrastructure emerges out of the co-housing experiences. New agencies offer support to gain access to finance and legal structures for contracting and maintenance, while allowing projects to design and operate on their own terms. Two examples will be discussed here: a housing association specialised in co-housing: *WBVG* [76] and new forms of consultancies, or mediators.

In the 1990s a regional Housing Association was created for self-managed projects: *Woningbouw Vereniging Gelderland,* (WBVG[77]). As a unique partner for co-creation and co-management, WBVG owns the real estate and assists in administrative of technical tasks, while the residents associations makes decisions about allocation of rooms and apartments, the use and maintenance of common spaces and so on. The WBVG defines residents associations as 'a low-risk group, because problems such as vacancies or deterioration will first be articulated and mostly solved internally' [interview 2012].

76 http://www.wbvg.nl/ (accessed February 2015)

77 www.wbvg.nl

Out of practical experience, several consultancies and not-for-profit organizations have professionalised the development process for co-housing (see also chapter 10). For example, individual architects or consultancies such as *De Regie* and *Bouwen in Eigen beheer* advise co-housing initiatives about legal, financial and technical matters. *Kilimanjaro* creates matches between candidate residents, land available for development and local authorities. Contrary to France, in the Netherlands there is no organization or federation yet to structure and position this new specialisation, and monitor the quality and professional risks [www.rahp.fr]. For co-housing initiatives, finding adequate advisors is as difficult as finding an institutional partner [interviews]. The exception is in senior and special needs housing:

Since 2000, the '*Foundation for the Realisation of Housing for the Over-55s*', *SIR55*[78], supports groups of seniors and mediates with municipalities and helped realise a number of projects. The federation of housing associations has installed a knowledge centre for 'Housing Plus Care' to identify and classify the emerging forms of housing suitable for the elderly or vulnerable groups[79].

TYPOLOGY / DUTCH TERMINOLOGY	TRANSLATION/DEFINITION	CHARACTERISTICS
Collectief Particulier Opdrachtgeverschap (CPO)	*Collective Private Client* (CPO) Collective self-development, equivalent of *Baugruppe* (building groups)	predominantly individual home-ownership, often during design stage common building parts, parking, playground or such are decided and remain in co-management after building
Zakelijk PO	Building groups for (small) entrepreneurs	Often concerns redevelopment of former industrial areas for creative industry
Zelfbouw	Self-build	Mostly involves (partial) building works by inhabitants but also used for self-development/ self-procurement
*Eigen*bouw	*Building for own use*, rather than self-building	Introduced by the National Expert Team *Eigenbouw*; includes PO and CPO
Bouwen in *eigen* beheer	*Developing for own use* or Self-procurement	Similar to CPO or *Baugruppe*

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78 *Stichting Initiatieven Realisatie 55+ Woningbouw* http://www.sir55.nl/default.asp?paginaID=87 (9 september 2015)

79 [http://kcwz.nl/dossiers/woonvariaties accessed 4 December 2015].

TYPOLOGY / DUTCH TERMINOLOGY	TRANSLATION/DEFINITION	CHARACTERISTICS
PO Particulier Opdrachtgever	*Private Client* Individual self-development,	Aim is individual home-ownership, inhabitants form one household and hire architect, contractor etc. as direct clients (Since 2000 stimulated by renewed national policies and facilitated in Municipalities with land, guidance, and 'catalogues'.)
Klushuis	DIY or Job- house	In inner city areas instead of plots, old volumes are sold at relatively low price with an obligation for renovation and self-use Policy for gentrification, attractive for 'starters' on the housing market who can make it affordable by self-building.
Casco woning	(Structural ? Professional developers owns the land builds the structure and sells 'unfinished' units.	Historical precedent in "*Open Bouwen*" principle of Dutch architect Habraken. Finishing the interior can be done by individual households or collectively. Separation between structure and interior can also include tenure whereby the structure is property of a housing association or coop and the units rented by the inhabitant who also owns the interior
Catalogus bouw	PO, buying from a catalogue	
Consumentgericht bouwen	Literally: *Consumer-focused or Tailor-made housing* Developer-led housing project with more options	Developers project that offers more options to buyers than turn-key (for example extra floor/ extension; different types of kitchen, bath and so on). The client is however still at the end of a chain, buying a 'product' rather than 'commissioning' : deciding about design and location from the start
Wilde Wonen	Wild Living, introduced by arch Weeber in the 1990s to indicate free choice of architecture	
Co-creatie	*Co-creation*; used more for area development than for housing. Indicative of a coalition of stake-holders, mostly with some form of (future) residents representation.	theoretically a bond between equal parties, in practice the influence of (future) residents is less than that of public authorities and large firms

TABLE 7.4 Table 7.4: Typologies of Dutch market-led housing (author, august 2014) Update 28 June 2016

§ 7.7 New insights for collaborative housing

§ 7.7.1 A culture of partnership

The fieldwork suggests that from the 1990s that innovative solutions found in co-housing 'micro-labs' can have wider institutional impact, for example on sustainability-standards. The firstgeneration co-housing was initiated out of environmental concern, and the residents' initiatives were more outspoken than the public standards at the time of their building, presenting more challenges to the planning regime. Some projects participated in experimental programs to enable further energy efficiency or the use of ecological materials [*author*, Buis 2000]. The process of negotiation between resident associations and private companies or public institutes can also be long and frustrating. The eco-village network warns that the pioneering groups should not be expected to take over public tasks: *'the effort to obtain building permission, as non-professionals, is demanding, and on top of that to be required to re-organise societal processes may lead to burnout.' [interview and website, see also note* [80]*]*. Nevertheless, the networks of present-generation eco-villages are now collaborating with governmental knowledge centres, such as Platform31 and the Innovation Think Tank of the Ministry of Economy: whereby knowledge flows between the planning regime and the niche innovators.

Despite this openness, and the availability of practical instruments, such as handbooks and guides for initiators as well as for planning departments, some barriers are deeply ingrained in Dutch planning culture. Van der Vegt (2011) concludes that a change of culture needs time, vision and imagination: "Although we do not have the answers yet, planners should practice trial and error". Dammers et al [2007:6] argue in favour of a guiding role for local planning departments, especially to 'protect the connections between (private) build form and (public) open space"[81]. Other authors point at the necessity for grass-root and institutional collaboration [see for example Tonkens, 2009]. Boonstra [2015] argues that

80 "Het verzilveren van deze innovatiepotentie (in dit geval bij Ecodorpen) voor de gehele samenleving blijft een uitdaging, omdat:" tijd voor middelen en vergunning > afbreukrisico; geen toegang tot prof/wetensch kennis; focus eigen project > wielen heruitvinden [http://www.ecodorpboekel.nl/doel-leercirkel-ecodorpen-verduurzamen-nederland/ May 2015 authors' translation].

81 "Het sterke verband tussen de regie, de bebouwing en de openbare ruimte mag tijdens het hele proces niet uit het oog worden verloren" (p.6) authors translation

"planners should no longer focus on organizing involvement in formal planning processes or setting up frameworks to counter fragmentation. Instead, planners should focus on creating consistency between the redundancy of spatial interventions and planning strategies that evolve from active citizenship." [conclusions dissertation].

In the current planning regime, the achievements of resident associations depend to a large extent on the attitudes of professionals and institutes in collaborative planning models. The perception of inhabitants as 'consumers' rather than as commissioning party is persistent, especially in the hybrid forms of self-housing. Ideally, collaborative housing schemes are realised in partnerships where all stakeholders have an equal say, but recognise each others' expertise and apply their own with the greatest professionalism. Unfortunately, different perceptions of the 'common' goal, prejudice and distrust often distort such working relationships. Locating housing initiatives in the niche-to institution route and applying the desired form of partnership (table 3) enables a suitable planning and communication strategy to be formulated. For planners, it is especially relevant to provide a framework for the quality of public space, accessibility and environmental impact.

§ 7.7.2 New typologies

The examples from the municipal and market response indicate that the top-down, industrialised way of housing is making way for more demand-driven approaches. The example of Almere shows that Municipal land ownership makes it easier to launch an operation that breaks with the commercial logic of urban development. Other municipalities rely on co-housing for the gentrification of vulnerable inner city areas. These changes in the institutional context and planning conditions as well as environmental policies in the Netherlands have contributed to the diversification of the co-housing model. Dutch studies such as Boelens & Visser [in Qu and Hasselaar 2011]; Sanders [2014] and van der Woude [2013] so far do not take these differences into account. One example is classifying both 'cohousing' projects developed in the 1990s, and post 2000 design and build '*Baugruppen*', as 'community-based or community-led' initiatives: "*Community-based selforganisation is in fact an articulation of the diversity of issues, lifestyles, organizations and spatial interests within urbanized areas.*" [Boonstra and Boelens, 2011:117]. However, for the first category, building is a means to create community, for the second the building initiative is a means to acquire a private home. Realised under different housing regimes, the intensity and nature of interaction between the residents of each category varies considerably. Generalizing co-housing in this way is a weak basis for social cohesion and other urban policies associated with co-housing [Droste, 2015]. The added value of co-housing clients

materialises in forming a critical mass, that offers possibilities for realizing affordable housing (IBBA), include functions formally classified as non-residential, and mobilize for low environmental impact such as renewable energy (geothermal). From a planners perspective it is therefore relevant to gain a more precise understanding of the type of co-housing concerned, but also to realise that part of the key-characteristics (such as tenure and lay-out) are the product of the planning system itself.

§ 7.8 Conclusions

In the Netherlands, initiatives taken by groups of households is persistent since the 1980s. This paper has outlined how forms of collaborative housing have emerged and diversified in the Netherlands since 2000, when the National policy started to promote self-development. While the percentage of self-procurement remains relatively modest [approximately 15% of yearly housing delivery], the ministry abandoned target percentages for a general call to replace the supply-driven housing regime with demand-driven mechanisms.

The emergence of new forms of collaborative housing, as independent collective client or with institutional or commercial partners, raises expectations: cities as well as national government begin to see self-organised housing as an innovative force. Nevertheless, for initiating groups, it remains difficult to find reliable advisors and partners, amongst others because there is no professional (quality) framework. Private developers support self-management housing, but the risk remains that the typical bottom-up logic is replaced with a superficial narrative of "building community" and a pre-set range of options, limiting the innovative potential of self-organizing groups. Moreover, collaboration between institutional providers (such as housing associations) and residents-led initiatives is tightly framed by national policies. The research found that partnership has even become more problematic due to the Dutch planning regime that imposes legal, quantitative or technical criteria. Despite limitations imposed by the planning and housing regimes, the projects can be read as forerunners in demand-driven housing production. The ideas and values of the co-housing initiatives, such as mixed tenure- or income categories, and radical environmental experiments require a revision of these rigid frameworks.

The overall picture resulting from the Dutch experience is that co- housing projects can be seen as transformative practices for planning and housing provision in the Netherlands. Notwithstanding, there are considerable differences between regions and institutes, depending on local planning challenges, such as shrinking or stressed

housing markets, and regional history. The objective of national policies should not be to create uniform responses to co-housing initiatives, but to create more insight and particularly consistency in the role of institutions that leads to more successful partnerships. After a century of collaborative planning between professional parties without structural involvement of end-users, it is too early to say whether institutionalized planning culture can be transformed from 'top-down' to 'co-production' between equal parties. Self-organisation has captured the political agenda, but its implementation will still require some major reform, notably in the attitudes of planners and investors.

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References from self- to custom build

Ache, Peter and Mischa Fedrowitz (2012) The Development of Co-Housing Initiatives in Germany. *Built Environment* 38(3): 395–412.

Benson, Michaela (2014) *Creating a Nation of Selfbuilders. An Interim Report from the Project Selfbuilding: The Production and Consumption of New Homes from the Perspective of Households.* London: Department of Sociology, Goldsmith,

Beuken R (2013) Country report NL. In: Maldonado E (ed.), *Implementing the Energy Performance of Buildings Directive (EPBD) - Featuring Country Reports 2012*, Paneuropean: CA-EPBD, pp. 279–286. Available from: http://www.epbd-ca.eu/archives/669 (accessed 24 March 2016).

Boonstra B (2015) *Planning Strategies in an Age of Active Citizenship: A Post-structuralist Agenda for Self-organization in Spatial Planning*. UU dissertations, Utrecht: In Planning. Available from: http://dspace.library.uu.nl/handle/1874/322810 (accessed 20 July 2016).

Boonstra, Beitske, and Luuk Boelens (2011) "Self-Organization in Urban Development: Towards a New Perspective on Spatial Planning." *Urban Research & Practice* 4, no. 2 (August 26, 2011): 99–122. doi:10.1080/17535069.2011.579767.

Boelens L and Visser A-J (2011) Possible futures of self-construction: post-structural reflections on ten years of experimentation with (C)PC. In: Qu L and Hasselaar E (eds), *Making room for people: Choice, voice and liveability in residential places*, Amsterdam: Techne Press, pp. 103–128.

Bouabbouz, Nabila (2012) "*Ondernemende eindgebruikers aan zet bij stedelijke gebiedsontwikkeling?!*" [entrepreneurial resident involvement in area development]. Master Thesis City Developer, Erasmus Universiteit Rotterdam/ Technische Universiteit Delft/ Stadsontwikkeling Rotterdam,

Bouwmeester, Henk (2005) "*bewoners bouwen de buurt. Collectief Particulier Opdrachtgeverschap in de woningbouw*." [Residents building the neighbourhood. CPO inhousing] Report by SEV for Ministry VROM.

Cammen H van der and Klerk L de (2012) *The Selfmade Land. Culture and evolution of urban and regional planning in the Netherlands.* 1st ed. Houten - Antwerpen: Uitgeverij Unieboek | Het SPectrum BV.

CBS (2014) Nieuwbouwwoningen; bouwvergunningen, gereedgekomen, 1995-2012 (housing production Public-Market-Private 1995-2012) *http://statline.cbs.nl/Statweb/publication* (17 August 2016)

Cüsters, John (2014) "*Wonen in zelfbeheer. Nieuwe kansen voor huurders op zeggenschap en lagere woonlasten*." [self-managed housing, new opportunities for tenants to participate and reduce the cost of housing] Amsterdam: Nederlandse Woonbond, 2014.

Dammers, E., Hanna Lára Pálsdottir, Lia van den Broek, Alexandra Tisma, and Like Bijlsma. (2007) "*Particulier opdrachtgeverschap in de woningbouw*." [CPO in housing] Ruimtelijk Planbureau Den Haag, Rotterdam: Nai Uitgevers. http://www.keicentrum.nl/view.cfm?page_id=1901&item_ty.

Droste, Christiane (2015) "German Co-Housing: An Opportunity for Municipalities to Foster Socially Inclusive Urban Development?" *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 79–92.

Expert-team Eigenbouw year report 2014

Hacquebord, Jeanet (2009) "Duurzame Stads oases" [sustainable urban oasis]. Wooninnovatiereeks23. http://www.ikcro.nl/php/indexvarvar.php?varvar=object&thesaurusname=ikc-thema&id=305318&concept=Ruimtelijke+ordening&soortlist=nieuws&days=7.

Ham, Marijke van den, and Geurt Keers (2010) "*CPO: markt voor bouwers*". [Self-building is a Market for Contractors] P14870. Amsterdam: Rigo in opdracht van St. RRBOUW. www.rigo.nl.

Healey P (2003) Collaborative Planning in Perspective. *Planning Theory* 2(2): 101–123.

Hulshof, Ineke (2014) "Sustainability and social housing, renewal of the Wallisblock and the Transformation of the Juno block." In: Nycolaas R, Horn Regal P, and Dexheimer Gil G (eds), *Sustentabilidade e Habitação de Interesse Social*, Porto Alegre, Brasil: EDIPUCRS, pp. 161–179.

Jarvis, Helen (2015) "Towards a Deeper Understanding of the Social Architecture of Co-Housing: Evidence from the UK, USA and Australia." *Journal of Urban Research and Practice* 8, no. 1 (March 2015).

Jarvis helen (2011) Saving space, sharing time: integrated infrastructures of daily life in cohousing. *Environment and Planning* 43(3): 560–577.
Jong, Els de (2013) "Generaties verbinden, inspiratie vinden. Inspirerende voorbeelden van intergenerationele projecten in wonen, zorg en welzijn". AEDES-Actiz kenninscentrum Wonen & Zorg. http://www.kcwz.nl/doc/nieuws/Generaties_verbinden_inspiratie_vinden.pdf.
Krämer S and Kuhn G (2009) "*Städte und Baugemeinschaften.*" Stuttgart + Zürich: Karl Krämer Verlag. Available from: wuestenrot-stiftung.de.
Krokfors Karin (ed) (2012) "Co-Housing in the Making." *Built Environment* 38(3): 309–314.
Kuenzli, Peter, en Arie Lengkeek "2004" Urban Jazz. Pleidooi Voor de Zelfgebouwde Stad. Rotterdam: uitgeverij 010.
Lans, Jos van der, and Pieter Hilhorst (2013) "*Sociaal doe-het-zelven. De idealen en de politieke praktijk*." [DIY society: ideals and practice] Amsterdam: AtlasContact.
Lloyd MG, Peel D and Janssen-Jansen LB (2015) Self-build in the UK and Netherlands: mainstreaming self-development to address housing shortages? *Urban, Planning and Transport Research* 3(1): 19–31.
Min. BZK (2015a). Woningwet 2015. *www.woningwet2015.nl*
Ostrom E (1999) Revisiting the Commons: Local Lessons, Global Challenges. *Science* 284(278): 278–282.
Ouwehand A and Daalen G van (2002) *Dutch Housing Associations. A model for social housing*. DUP satelite, Delft: Delft University Press.
Qu, Lei and Evert Hasselaar (2011) 'Making room for people: Choice, voice and liveability in residential places' Amsterdam: Techne Press.
Roetgerink, Frederike (2006) "Bouwen aan effectief beleid voor particulier opdrachtgeverschap." [Effective policies for CPO] iov. Min. VROM DGW. Enschede: TU Twente, Faculteit BTT
RVO (2015) *Expertteam Eigenbouw, jaarverslag 2014*. businessreport Expertteam DIY housing 2014, Den Haag: Min BZK; Rijksdienst voor Ondernemend Nederland.
Servillo LA and Van Den Broeck P (2012) The Social Construction of Planning Systems: A Strategic-Relational Institutionalist Approach. *Planning Practice and Research* 27(1): 41–61.
SEV Realisatie (2007) "*bouwen met burgers*": (handbook CPO for municipalities) Provincie Noord Brabant en SEV,
SEV (2006) *Bewoners aan zet. Vijf jaar experimenteren met particulier opdrachtgeverschap*. Stuurgroep Experimenten Volkshuisvesting. Available from: http://kennisbank.platform31.nl/websites/kei2011/files/KEI2003/documentatie/SEV_Advies_Bewoners_aan_zet_aug2006.pdf.
Seyfang G and Haxeltine A (2012) Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions. *Environment and Planning C: Government and Policy* 30: 381–400.
Seyfang, Gill (2008) "*Grassroots Innovations in Low-Carbon Housing*." ESRC. ISSN 0967-8875. The Centre for Social and Economic Research on the Global Environment (CSERGE),
Sour, Annemarie (2009) "169 Klushuizen. Van experiment tot instrument." [169 job houses, from experiment to instrument] Rotterdam: Epsiode Publishers
Tellinga, Jacqueline (2010) "*De Almeerse werkwijze*." [The Almere way] S&RO 91 (3): 36–42.
Tummers L (ed.) (2015a) Taking apart co-housing. Towards a longterm perspective for collaborative self-managed housing in Europe (Introduction to the special issue). *Urban Research and Practice,* 8(1).
Tummers L (2015b) Understanding Co-Housing From A Planning Perspective: Why And How? *Journal of Urban Research and Practice* 8(1): 64–78.
Tummers L (2016) The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research. *Urban Studies* 53(10): 2023–2040.
Uitermark J (2015) Longing for Wikitopia: The study and politics of self-organisation. *Urban Studies* 52(13): 2301–2312.
Vegt J van der, Adriaanse C and Jansen S (2014) *Proces, kosten en tevredenheid bij zelfbouwers in ALmere*. Delft: TU Delft pratijkleerstoel gebiedsontwikkeling.
Vegt, Jolay van der (2011.)"Doe-het-zelf plannen, ontwikkelen en bouwen vergt een totale cultuuromslag." [DIY planning requires a radical change in planning" contribution to Blog *Gebiedsontwikkeling.nu*, Praktijkleerstoel Gebiedsontwikkeling TU Delft. Available from: http://www.gebiedsontwikkeling.nu/actualiteit/verslagen/de-doe-het-zelf-mens/.
VROM, Ministers Remkes and Pronk. (2000) "Mensen Wensen Wonen. Wonen in de 21ste eeuw." Den Haag: Minstrey of Housing and Spatial Planning (VROM)
Wohnbund e. V. (ed) (2015) *Europa Gemeinsam Wohnen | Europe Co-operative Housing*. Berlin: Jovis.
Woude, Henk van der (2012) *Community Architecture in Nederland*. Bussum: Toth.

TOC

8 Opportunities and risks for energy-transition in self-managed housing clusters

Experiences from the Netherlands[82]

Summary

This chapter explores the energy practice of co-housing projects, and how these developed within the Dutch context. The aims of this study is to find tools to optimise the energy engineering of co-housing projects, and the wider housing stock.

At project level, the case-studies show that the involvement of inhabitants in design and management generates (financial) benefits flowing back for the common good. There is no systematic monitoring that can relate these benefits to benchmarks from 'mainstream' housing. The study identified pitfalls of assessing the energy performance of co-housing and classifies the lessons learned in six domains.

The chapter concludes that to enhance residential energy engineering new attitudes and coalitions are needed to develop and engineer models for energy and other utilities that can be operated effectively by residents, thus involving them as co-creators rather than consumers or beneficiaries in energy-transition. Chapter 10 follows up on this by a study of professionals, such as engineers, who collaborate with co-housing initiatives.

This study took shape initially in the seminar ARO532 Innovation and Sustainability Theory, given by Eric van den Ham, Department of Architectural Engineering + Technology, Section Climate Design. Figure 8.1 and 8.2 present pages from a manual for collective decision-making on heating systems, made to envision 'co-engineering' processes in resident-led housing.

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FIGURE 8.1 -Page from 'the best way to keep warm' a guide for collective decision-making on heating systems, explaining its purpose (Tummers, 2015)

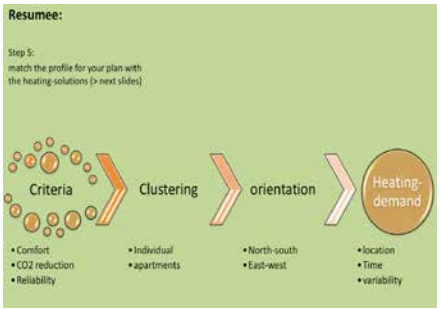

FIGURE 8.2 Image from manual summarising the steps to decide collectively on a heating system (Tummers, 2015)

§ 8.1 Introduction: the emergence of 'prosumers'

In the light of depletion of fossil fuels, pollution, energy-inefficiency and energy -inequality, as well as climate change targets, the transition to a sustainable energy system is inevitable. Since the 1970s, the Dutch government has developed policies to reduce energy demand in housing, since 1995 by means of the Dutch Energy Performance Code (EPN)[83], and recently following the European Directive for Energy Performance in Buildings (EPBD nr. 2010/31/EU) [Maldonado, 2013]. But so far the energy consumption of Dutch households has decreased only by 1% per year[84]. Likewise, introduction of renewable energy sources in the Netherlands is slow and the national target for a 14% share in 2020 is not likely to be met [Lucas et al, 2016].

Until recently, such issues were seen as highly technical, and when a social dimension is involved it is primarily in terms of 'acceptance' and 'behaviour' [Rahimian et al. 2015]. This places the end-user in a passive role, even though changes in behaviour may be expected. At the same time, civil initiatives have emerged that address energy transition in a number of ways [Prasad et al, 2016]. Motivated by concern for a healthy environment for present and future generations, as well as the dependence of imported fossil energy, and dissatisfied with slow environmental policies, groups of households

83 originally NEN 5128 and NEN 2916, which set targets for the energy performance coefficient of buildings (EPC)

84 www.clo.nl/indicatoren/nl0435-energiebesparing-in-nederland [last visited 28 August 2017]

invest in renewable sources such as wind-turbines or PV plants [Rescoop 2016; Elzenga and Schwenke 2014]. Other collectives start to develop and manage low-impact housing. Thus, former 'consumers' or 'beneficiaries' of serviced homes are becoming commissioners and producers of housing, energy and services: so-called '*prosumers*'. A technology-centred approach ignores the implications of this profound change of roles [Oudshoorn et al, 2003]. As co-creators or prosumers, the initiatives develop energy-related practices that are different from the standard single 'consumer'-unit.

The few energy-related research into self-developed housing clusters are however promising. Some studies looked into the benefits of sharing activities, such as cooking and eating meals, laundry installations, play or meeting rooms, or other facilities [see for example Kido 2011, Stevenson et al. 2013]. A Swedish explorative case-study calculated that everyday practices in co-housing reduces CO2 emissions with 1 ton compared to standard housing [Sundberg, 2014]. A Swiss coop calculated that the footprint of their housing model was about 25% of Swiss average[85].

The research presented here has looked at the engineering of utilities and use of renewable energies in self-developed housing projects, to answer the question: *how do residents' associations implement their ideas on sustainability and energy transition, when they can influence design and management decisions in the build form and engineering?* To answer the question, the research looked at differences between residents-led and standard institutionally provided housing and how these affect the energy performance. The study found that housing collectives are generally prone to going beyond the state-of-the-art in sustainable measures, while their success depends on their institutional environment and professional partners. The aim of this paper is to identify the opportunities and bottlenecks in how these practices influence energy demand and distribution, and what could be their relevance for the wider housing stock. In order to compare energy systems with standard or mainstream housing, an approach has been developed for the analyses of the engineering and social practices that accounts for building technology, the design and installation of utilities and the patterns of use in a combined framework.

The evaluation focusses on the Dutch case to produce insights that can improve the engineering of utilities for self-managed housing clusters. Furthermore, they can be transferred to higher scale levels, as well as other institutional and climate contexts, to advance energy transition in residential clusters.

85 www.cooperative-equilibre.ch/wp/wp-content/uploads/2016/09/EQ_LIVRE_10ans_BD.pdf [last visited 28 August 2017]

The chapter is organized as follows:

Section 2 accounts for the selection of projects, the collection of data and methods used in the context of Dutch energy policies. This is followed by a theoretical framework, explained in section 3. Section 4 presents examples of housing projects, to shed light on the typical design-process for energy and utility systems of self-developed housing initiatives. Section 5 discusses the findings and places them in a wider perspective. The conclusions propose that the collaborative dynamic offers additional opportunities as an intermediate scale between the larger network and the individual household.

§ 8.2 Research design, case-selection and data collection

An international literature survey prior to the fieldwork showed that resident-led housing projects are pioneering in energy transition [reference removed for review]. However, so far very little quantitative empirical evidence or systematic results of monitoring have been published. The fieldwork then focussed on The Netherlands, to frame the comparison in a single context of environmental and housing policies (table 2), building industry and geographical climate (textbox 1, see chapter 4). However, the research is informed by practices and studies across Europe and the authors' approach and methodology can be applied in other national contexts.

For the state of the art of energy-efficient housing in the Netherlands, national policy documents and programme evaluation reports were analysed. This inventory led to defining four periods of energy and housing typology, each introduced by a rupture with previous policies or regulations (See table 4.1 and chapter 4). From each period, representative housing projects were selected amongst institutional state-of-the-art and self-organised initiatives. Energy-related information of projects was found in the technical briefings for the building license, contracting and technical maintenance. Planning documents further provided information into the extent to which energy optimisation had influenced the urban layout and cluster design. Information on the initiatives was gathered through 'participative research': during project visits and interviews a dialogue took place between researcher and interviewees, about the motives that led to the choice for one construction or engineering type over other possibilities. The roles of the interviewees varied from residents running the association to consultant, evaluator, partner or professional involved in the project design, construction or management (Table 1). During visits the technical data were discussed and verified with the residents, who often have detailed knowledge about

modifications over the years after construction. They also represent the groups' attitude towards energy and technology. On some occasions the full documents were no longer available, and specific questions about energy-systems could not be answered.

Finally, International networks for self-organised housing have documented and published their experiences, in different media and occasions. Albeit subjective resources, these provide valuable insights in the rationale behind energy-related decisions and the bottlenecks encountered (see for example Chatterton, 2015; Palojärvi et al, 2013; Locatelli et al, 2011).

§ 8.3 Framework

The residents' associations depend on institutional partners, for example to realise rental units or obtain building licence. The energy-systems found in the Netherlands fieldwork are largely shaped by the (affordable) technology available. This in its turn is influenced by energy-policies that emphasize energy savings at one time, or renewable sources at another. This lead to an analytical framework that consists of three energy-related elements: engineering, social practices and policy context, further explained in this section.

§ 8.3.1 Comparing Energy Performance

Quantitative empirical data on energy usage in self-managed housing clusters are needed to assess the long-term performance and comparing it to benchmarks from mainstream forms of housing. The fieldwork found that these are not sufficiently available. Moreover, closer analyses revealed a number of specific obstacles that hamper an empirically grounded understanding of energy performance in self-developed housing clusters. The following pitfalls of quantitative assessment where identified:

First, the European regulation based energy label (or energy certificate) introduced in 2008 could provide a general standard to compare the energy performance of co-housing. In the Netherlands, all dwellings received a preliminary E-label in 2015 informed by the year of construction based on the energy standards in force at that time. The average score of Dutch houses is estimated at label C-D [RVO 2015], which means there is ample room for improvement. However, measures taken after

construction, for example using subsidies to improve insulation or install solar boilers, are not taken into account. At this stage the energy certificates are not reliable enough to include E-labels as reference in the research [Eerd 2015].

Moreover, as energy-regimes and technology evolve, the challenge was to find indicators for energy performance in housing projects that are comparable over different periods of time. At its introduction, the maximum Energy Performance Coefficient (EPC) for dwellings was set at 1.6, since 2015 maximum EPC is at 0.4, hence different generations of projects had to respond to different normative values to obtain building licence (see table 4.1).

Also, the calculation model itself has evolved: relative weighting factors have shifted and new technologies have been included, lowering at the same time the appraisal of other technologies [Beuken, 2013]. Because of this, comparing the performance by EPC exclusively does not provide accurate information. In a European context, the regional differences between pace and implementation of energy standards in housing further complicate the comparison.

Fourth, a quantitative calculation of energy flows provides information on energy savings and – reduction of – toxic emissions. Energy monitoring repeatedly shows that the prognoses of calculation models are not met. This is often explained as to the rebound effect, and 'behaviour'-based approaches. A quantitative assessment that accurately approaches, explains or even predicts energy-performance thus needs to be constructed in a multi-layered algorithm that acknowledges the complexity of residential energy systems, instead of reducing them to a product-based concept [Poolani, 2018].

Finally, a quantitative approach needs to be complemented by the type and quality of utility engineering. Not only does this influence the energy-efficiency of (residential) buildings reducing exergy (system losses). it also includes aspects such as clean, renewable sources, accessible technology for (self-)production; comfort, reliability, and fair cost allocation.

On these grounds, this paper places the selected projects in a matrix that combines the dimensions of energy-flows, and technology (table 4.1), testing the design decisions against the social practices specific to collective housing initiatives.

§ 8.3.2 Comparing Social Practices

To complement the technology oriented approach, this paper uses 'social practices theory' to assess the complex, situated, relations between consumers, producers and systems of provision (in this case energy-supply). Social Practices include both the practical and cultural dimensions of everyday habits and personal choices. Karvonen [2013, based on Shove & Pantzar, 2005] explains that social practices are a combination of:

- *materials*, in this case the built form and utilities;
- *competences*, here specifically skills and know-how related to renewable energy;
- *images*, such as the ambition to create sustainable housing; and
- *interpretations*, for example of 'sustainability' or 'low impact housing'.

This concept informed the analyses of the selected projects.

The cases below show that social practices in self-managed housing clusters include new patterns of consumption and mobility. Amongst others, pooling resources makes it possible for co-housing participants to apply renewable energy, and to operate the technical utilities within the project, such as recycling of waste and water, solar or common heating installations. In this process, collaborative housing initiatives develop innovative solutions for decision-making, maintenance, finance and administration related to energy and thus become 'prosumers'. Recent studies demonstrate that the Energy-related 'rationale' of production is far apart from the 'rationale' of usage [see for example: Ingle et al. 2014; Gram-Hanssen, 2013; 2014; Subrémont 2011]. Both individual and as a group 'prosumers' need to bridge this gap and harmonize both rationales. The engineering of utilities mediates between energy flow and social practices which raises the question how the design of utilities can respond?

Besides technology and social practices, the housing projects are shaped by the institutional environment that imposes building regulations and legal requirements on the design. The Landscape of Dutch energy regimes against which the housing initiatives developed is introduced in the next section. This accounts also for the selection of projects from different regimes.

§ 8.3.3 Context: Environmental policies

Since the first 'oil crisis' of 1972 and reports of the Club of Rome [Meadows et al. 1972] the Netherlands has developed environmental policies, although the first integrated Environmental XXX did not appear until 1989. Since 1996 an energy performance (EP) calculation has been mandatory to obtain building licence. For the calculation of the EPC, certified advisors are required [*Bouwbesluit*/Building Act 2012, NEN 7120]. Since 2002, energy policies follow EU-standards (EPBD). While the EPN was mandatory, other instruments for energy reduction and use of renewable sources and sustainable building materials were more of a 'stimulating' than of an enforcing and sanctioning nature. Despite accessible knowledge and advantageous fiscal regulations, the market remained reluctant to integrate renewable energy systems in housing until around 2007 (van Bueren, 2009). Housing associations are slow to invest because of the so-called split incentive: they do not benefit financially from energy-saving measures they invest in. Dutch energy-related policies primarily aim to create extra jobs by agreements with the industry, growth of clean-tech industry, and energy-intensive industries [EZ 2013]. Yet so far, the combination of energy transition and economic boost has not been very successful [CPB/PBL 2014:64]. Also, the abundant availability of natural gas diminished the sense of urgency regarding the transition towards renewable sources. This changed with the increased risk of earthquakes in the gas-winning regions, which caused an acceleration in energy-transition related policies.

The slow implementation of renewable energy in housing has stimulated citizens with environmental concerns to organise, from investing in wind turbines to zero-energy housing. According to the latest survey, more than 400 local civil initiatives for renewable energy production have emerged [Elzenga & Schwencke 2015]. Grass-root alternatives (notably local PV-based) took such a flight that they became a challenge to the highly centralised energy supply. The national Social Economic Board initiated a society-wide process to reach an 'Energy Agreement' [SER 2013]. In 2013 consensus was reached between the major stakeholders but including civil society (NGO's) on annual efficiency savings to 1.5% or 100 Petajoules (PJ) from national energy consumption until 2020 and the deployment of renewable energies to be 14% by 2020 and 16% by 2023 [SER 2015].

The current (2017) situation of the Netherlands is characterised by several converging trends: after a period of stagnation, there is more pressure on the government to accelerate energy transition, both from bottom-up initiatives, themselves, and top-down directives (EU; COP21). the market of energy suppliers, network managers and the building industry has shown renewed interest in energy-transition, especially in the housing stock. New technologies for smart grids and home engineering as well storage (e.g. electrical cars) become available. Table 4.1 shows the landmarks that introduced new regimes.The policy periods relevant to energy can be summarized as follows:

1985-1995: the *introduction* of concepts of sustainability and the need for reduction of CO_2 emission and fossil fuel dependency

1996-2006: *implementation* development and dissemination of instruments such as LCA, Energy Performance Code (EPC), financial incentives, handbooks. European energy directives.

2007-2012: *stagnation*, due to lack of investment capacity and economic priorities of a new coalition in national government

2013-date: re-*emerged* sense of urgency, due to societal pressure. A new interest in civil initiatives is changing the relation between public and private initiative, as is further discussed below.

§ 8.4 Selected projects

This section illustrates the housing approach representative of the periods outlined above, focussing on resident-led projects and their energy decisions.

FIGURE 8.3 Location of projects disccussed in this chapter

UNITS, TENANCY	BUILDING TECH	ENGINEERING	ENERGY-PERFORMANCE	GOVMTAL PROGRAM / SUBSIDIES	ARCHITECT/ CONSULTANTS
Romolenpolder (1990, Haarlem)www.cwrom.nl/extern					
46, rental, Housing association subject to Norm Cost System	concrete, lime-blocks brick,	Individual HR gas heating,	standard Rc =2,5 (roof/ facade)	subject to Norm Cost System (public housing)	Bureau Herenmarkt, Tjerk Reijenga as sustainable consultant for residents organisation
Groene Marke (1995, Zutphen) www.middenhuis.nl/vwz.html					
50, rental and home-ownership, mixed prices; commercial units; common house as shared space	timber structures and concrete floors	Individual VR & HR gas heating, LTS optional for home-owners; collective rain-water capturing	before EPC. Now assessed label A or B.	National Demo program (SEV)	Willem Grotenbreg (Ubbels, sustainability expert)
Meander (2008, Zwolle) www.meanderhof.nl/					
53, mixed tenure, including workshops and meeting place	Innovative building materials, high insulation standard	Individual HR++ ketels	EP=1,2		Frans van der Werf (specialised ecological architect)
IEWAN (2015, Nijmegen) www.iewan.nl/					
Clustered multi-storey 24 rental units; common house plus workspaces	straw-bale self-build Bufferzones/ semi-collective spaces	collective pellet heating; collective solar, water recycling through local reedbed	Energy-neutral; EP=0	Subsidies from local authorities	Michel Post (WBVG self-management specialist)

TABLE 8.1 Overview of energy-related features of discussed projects (2016]

§ 8.4.1 Introducing sustainability: Ecolonia and CW Romolenpolder

To introduce the principle of sustainable housing, the government supported the building of *Ecolonia,* ±100 suburban houses demonstrating a number of market-available options to reduce energy consumption and use renewable sources [technical briefing Ecolonia, 1991]. Evaluation by DHV AIB BV in 1995 showed that neither contractors nor residents had any previous knowledge about sustainable building. This caused problems during realisation, and the energy-saving results were disappointing, also because residents did not adapt their lifestyle.

In the same period initiated a co-housing[86] project in an area also declared sustainability area in the city of Haarlem. Figure 8.4 shows the 46 rental units of different sizes built around a common garden which were delivered in 1992. The project was realised under a subsidised housing regime, that involved certain building standards[87]. Interviews with residents and minutes of project design meetings witness the large amount of information the RA gathered, and the residents proposed a number of sustainable measures, but none of them were accepted by the HA. While the project was equipped with standard engineering, the design contains some features later appearing in manuals and guidelines, such as glazed corridors as climate buffer zones, and use of lime-stone allowing for some flexibility. Units have been to join or separate several times. The Housing Association (HA) demanded that the common rooms could be turned into an apartment in case the residents' association was resolved, which meant concentrating them on one location in the block.

FIGURE 8.4 CW Romolenpolder, common garden with access to common apartment (Tussen Ruimte, 2012)

86 the Dutch Cohousing movement, *Centraal Wonen*, model of clusters around common rooms [www.lvcw.nl].

87 Normkosten system

§ 8.4.2 A focus on implementation: Oikos and Groene Marke

In 1991, sustainable state of the art was moving from building scale to urban design. This reflects in *Oikos*, an urban expansion area applying new principles of pavement, water management and greening. Around the same time, a sustainable resident initiated project of fifty residential units In Zutphen, built around a Green Common ('*Marke*') of about 4000 m^2. The residents' association selected a local architect who had implemented the then latest insights of sustainability in two earlier projects in the area (technical documentation Grotenbreg Firm, 1992-1997). The association collaborated with a housing association *Woningstichting Zutphen* (WZHA) to realise a mixed-tenure structure, including 25% low/medium-budget rental units and some work spaces. The WZHA delivered professional services such as financial administration and supervision of the building works and acted as formal client for the contractor. The Groene Marke initiators describe the decisions on energy and sustainability as 'random':

"Most of the sustainable building ideas came from the architect. We had both social and ecological aims. We were very motivated, because of the situation in society. We also had members who were very well informed. We chose what we knew and felt affinity with. We wanted breathing houses and no toxic radiation." (interview 27-2-2012)

The architect classifies the result as 'eclectic'. Grotenbreg wrote the briefings himself: one standard (following the WZHA specifications) and a second with a consultant (Ubbels) with 'sustainability measures' as add-ons. The contractors had to make 2 cost-estimates, standard and environmental. "*This was very difficult for the calculators, but we negotiated good prices in the end*" [interview architect 2012]. The rental units are equipped with the WZHA standard which means small units (social minima) are heated with a standard device (VR, improved efficiency boiler), leaving low-rentals with a relatively larger energy bill, whereas larger units with individual high efficiency (HR, high-efficiency boiler) heating. Home-owners had options to (self-)install wall-heating and solar panels, but all roofs are designed for solar energy, with a 30-50° slope and suitable orientation.

"We will later replace them with renewable sources. Now for example we are investigating to put in place a heat pump for the communal house, with CO_2-earth (meaning: geothermal), because ventilation-air exchange is too electricity consuming. We want an energy-neutral building and the present HR boilers in cascade are not. The distribution system in floor, wall and radiators is already in place. We have land for drilling (the geothermal subsoil piping); 13 kW for the communal house is enough, it is very well insulated. The municipality supports the project because they had a bad experience and now it is important to do it right for the promotion of sustainable energy." [interview technical delegates of the residents' association 2012]

The idea is to experiment with geothermal installations in the communal house, and based on the learning experience apply it for the residential units to make the project energy-neutral. This vision was not realised at the first instance, due to the lack of technology available at reasonable costs. Meanwhile Groene Marke captures rainwater and sells it to the inhabitants (for toilet-flushing and washing machines) at market fees, which helps paying for the communal house bills and innovations [interview technical delegates Groene Marke 2012].

FIGURE 8.5 Groene Marke, same architecture but different engineering for rental and home-owners (Picture: Tussen Ruimte, 2012)

§ 8.4.3 Stagnation: stimulating private initiative and Meanderhof

In 2001, instruments for sustainable housing such as EP normative and 'green; loans' awarding sustainable measures with lower interest rates were in place. At national level, policies focused on stimulating self-building rather than intensifying sustainable housing. In Zwolle, a housing initiative emerged from candidates on the waiting list of an earlier self-managed housing project. The residents' collective established a partnership with *DeltaWonen*, the local housing association (DWHA), and an architect specialised in ecological construction. The project, completed in 2008, includes 53 housing units, small business, meeting rooms and a communal bicycle shed. The energy concept is based on "high insulation rather than complex technology" (interview residents February 2012), resulting in an average EPC score of 0.65 at a time when the norm was still about twice as high (1.2, see table 1). The project was built from an innovative wood construction with high thermal insulation, using relatively unknown products such as cellulose, *Pavatex* panels and insulated wooden window-frames, imported and adapted from Scandinavian model and applied for the first time in the Netherlands. The flats are however equipped with a conventional heating system (Dutch standard at the time): supplied by an individual gas heater, distributed through radiators, dimensioned at 80/60 degrees (technical brief, 2006). Some ambitions could not be realised, for example: vegetated roofs were not permitted because the urban plan specified that the neighbourhood had to "look like the 1930s". The residents planned to harvest rainwater but were told this would have little environmental benefit, because of the cities' infiltration system[88] [interview initiator/ inhabitant].

The experimental building methods required considerable attention and an interest for technicalities. There were serious problems during construction: the contractor did not apply the insulation properly and the residents ordered thermal scans to check the quality of the insulation showed huge variations and numerous leaks. Some repairs were made, "*but we are still not sure we got what it said in the briefings*". Nonetheless, no systematic energy consumption monitoring took place "*and all apartments and families are different anyway, you couldn't compare it*" [interview residents February 2012]. In making design choices "*we prioritised human interaction, but often this works well together with sustainability, for example in creating common courtyards instead of private gardens*" (interview residents February 2012)

88 From a technical perspective it could be argued that local recycling of water would have contributed more to reduce the housing-related footprint than feeding it into the cities' watersystem

FIGURE 8.6 Meanderhof, PV cells added later (Picture: Tussen Ruimte, 2012)

FIGURE 8.7 Meanderhof, emphasis on insulation (Picture: Tussen Ruimte, 2012)

§ 8.4.4 Re-emergence: Iewan, Lent (Nijmegen)

The new sense of urgency regarding energy transition, enhanced by both international agreements and the National Energy Agreement [SER 2013] revived interest in zero-energy housing of the building industry. Self-procurement policies increased opportunities for residents' initiatives on the housing market. The 'Initiative Ecological Housing Nijmegen' with the acronym of IEWAN emerged around out of an established co-housing initiative (Refter) and found a building site in the Nijmegen urban extension of Lent. IEWAN created partnerships with two housing associations: Talis (THA), a typical Dutch semi-public corporation, and *Woningbouwvereniging Gelderland* (WBVG), specialised in self-managing housing collectives. The initiative was also supported by the Municipality of Nijmegen and the provincial authority of Gelderland. Under a social (affordable) housing regime, 24 units were built with common rooms and services that are inhabited since May 2015. A second, smaller, building provides working spaces and function rooms. Ecological and energy ambitions were high, hence the choice for clustered building in straw-bale construction. The dwellings are situated to capture sun especially in winter, additional heating is provided with a collective pellet incinerator. Hot water is generated through heat recovery from ventilated air. There is no connection to the natural gas network, a novelty for housing in the Netherlands. Rainwater is captured in a reed bed and recycled for toilet flushing [technical briefings IEWAN and explanation by inhabitants, 2015].

During the building phase, instructive workshops were organised for volunteers who in exchange helped building the outer walls. The monthly tours for candidate self-builders, which the residents organise raise considerable interest: there are 40 participants on average, half of which plan for co-housing [interview 2015]. A learning process also takes place between the initiators and their institutional partners. In this case, the contractor was capable to apply innovative technology, but also bound to contractual obligations and quality standards of the HA, and formally responsible for people on the site. The residents' association is however aware of the 'cultural differences', such as decision-making and design processes, that need to be bridged in working together.

FIGURE 8.8 IEWAN, shared garden and common house (Picture: Tussen Ruimte, 2016)

FIGURE 8.9 IEWAN, shared space and thermal buffer (Picture: Tussen Ruimte, 2016)

§ 8.5 Lessons for the engineering of co-housing utilities

The differences between projects regarding energy systems are characteristic of different generations of sustainable policies and technology. Yet they are to a large extend due to the groups' vision on sustainability, and the response of their partners during realisation. For example: *Groene Marke,* built at initial stages of environmental policies, was motivated to apply the very state of the art and, through self-management, to continue to optimise the energy-system of the project, accepting

different spatial-technical standards related to tenure. On the other hand, the *Meanderhof* group, built during the 'instrumental period' (table 2) prioritises social interaction and has more distance to technology, emphasizing the structural measures reducing the need for energy consumption and avoiding complex technology. *IEWAN*, built after the stagnation period, bridges the 'DIY' and 'institutional' approaches to achieve a high standard at affordable rents.

Further lessons can be drawn regarding the adequacy of the engineering of residential energy systems; the social practices initiated by residents, and the institutional environment. Table 8.2 provides an overview of key variables making the difference.

TABLE 8.2: SELF MANAGED HOUSING AND ENERGY: KEY-ELEMENTS (SOURCE: AUTHOR, 2016)

VARIABLES	Energy-saving	Energy-production	Exergy (reduce losses/ optimise flows)	Overall CO2 balance
Sharing resources	Community rooms; laundry	On-site water purification; solar	Reduce pipe length & assets when replacing indiv	Depends on intensity of community-life; Joined Investment capacity
Learning process	Behaviour/peer pressure Collective setting of comfort standards	Pioneers/early adaptors	knowledge exchange on operational matters	High Footprint awareness; critical mass as client
Design	Dimension/ Efficiency Bufferzones/ semi-collective spaces	Cluster orientation	Clustering for reduced external surface and transport losses;	User-perspective and Urban insertion (mobility)
Engineering	System choices	Geo-thermal; WKK; collective solar	Compact internal circuits (eg hot tap water or heating); cascading /Storage	integrating Energy-concept (Insulation & heat & ventilation)
Self-management	Monitoring Billing system	decisions on investments & benefit return system	Peak-shaving	Lack of expertise? (advisors)

TABLE 8.2 Self-managed housing and energy: key-elements [Author, 2016]

§ 8.5.1 Design & engineering for energy

Projects include a varying amount of 'functional rooms', which influence the energy system. For example, when 'socializing' (meeting) is an important and central issue for the project, common rooms will be used more intensively and reduced periods of heating individual dwellings. If such functions require servicing, for example with hot tap-water, a decision needs to be made to create a separate system or connect to another system already present. The individual servicing simplifies billing but reduces flexibility to adapt the size of units to future household needs.

One outstanding design feature of self-managed housing projects is the presence of 'intermediate' spaces such as the glazed corridors in *Romolen*: widened corridors, halls, covered courtyards and enlarged stair-cases [Williams 2005; Fromm 1991]. Intermediate spaces are important for informal contacts, while they also form buffer zones between the outdoor temperature and indoor heated dwellings, which IEWAN is making use of. his combination of space to enhance informal meeting between residents, and buffers to save energy, can be applied more widely.

Data from demonstration projects indicate further savings may be achieved in the material and piping for collective, high-tech energy utilities. On the other hand, the internal distribution system expands, which leads to transport losses for heat or hot (tap) water distribution and inefficient heat-recovery systems from ventilated air [Stofberg *et al.,* 2000: 115]. It is difficult to predict in which way the balance tilts, because until now research has predominantly focused on reduction of energy used for heating in individual housing. Collectively developed housing projects and the clustering of units open up a range of possibilities beyond individual dwellings. Tillie et al. [2014] for example point at the possibility to re-use energy flows on an intermediate scale. Clustered development also enables the application of alternative sources, which normally are not affordable for single dwellings, for example geothermal or cogeneration (WKK).

In the urban domain, the cluster encompasses the intermediate level between individual buildings and the district. This scale level could be given a specific place in cascading energy flows (such as heat), rainwater collection channelling investments between individual utilities and large infrastructures with low-efficiency (high-exergy) values.

§ 8.5.2 Social practices and involvement

A strong involvement of (future) residents during the design and further lifespan of the project This enables them to influence the energy consumption not only by behaviour, but also by the choice of technology and sources, keeping up with new developments or even own inventions. The wider fieldwork confirmed that co-housing projects are amongst the 'early adaptors', at the same time criticising national energy policies and making use of legal and financial instruments. Self-developed housing eliminates the developers' margin [SEV 2010, RIGO 2011]. Both the fieldwork and literature review show that projects invest this margin rather than reducing the budget [Van Voorden en de Groot Groep & De Regie 2004]. Co-housing initiatives invest especially in state-of-the-art sustainability. Co-housing initiatives are proportionally overrepresented in subsidised innovative housing programs [see for example SEV 2001, SenterNovem 1998]. In the second national demonstration programme for sustainable housing 1996-1999 four out of twenty-five housing projects were initiated by residents-collectives and a fifth project follows the co-housing model while a housing association was in charge [reconstructed from Buis, 2000]. In the Dutch developer-dominated building industry[89] this percentage is significant.

In most self-managed housing clusters, the practice of sharing tools or equipment extents to space, building components or utility devices and infrastructure, for example the common roof may hold a solar installation. The investment may come from the common budget or from more affluent or motivated members who then pay a (modest) fee to the association but receive the larger share of the benefit. The case of Groene Marke shows how water-recycling both physically and financially flows back into the common good. Sharing means of transport or combining trips also affects the energy used for mobility[90]. During the design and management, a learning process takes place, which is enhanced through networks. Using the built project as living lab, outreaching activities take place especially interesting for future initiatives, as is illustrated in activities organised by *IEWAN*. Processes of collective learning and adapted behaviour influence the real performance of the building and technology, and are a precondition to make the hardware function optimally [Baborska *et al.*, 2014].

89 Housing developed by individual or collective private initiative is max 15% of annual production

90 This aspect lies beyond the scope of this paper but strongly influences the preferences of location for co-housing and has significant impact on the overall footprint of projects.

§ 8.5.3 Renewed Governmental interest in civil initiatives

While citizens are taking initiative because they perceive government as being too slow, government perceives a lack of support from the general public for the measures it seeks to implement, see for example the evaluation of Ecolonia.Recently, the statistics (CBS) and research (PBL) agents of the government have reached new insights into the potentials of bottom-up projects. According to a joined study, the bottom-up initiatives primarily consist of energy cooperatives, but a large part of the population is not involved in energy transition [CPB/PBL 2014:50]. The reason is sought mostly in the motivations of households, assuming the interest in new energy technology increases when the impact becomes easily visible (in terms of reduced bills or other). The national bureau for planning (CPB) and for the environment (PBL) signal that:

'At macro level, the Netherlands is far behind European countries in the transition towards renewable energies, but this may change with the emergence of bottom-up initiatives. Solar collectors and policies have enabled people with environmental concerns to actively contribute to the solutions. (...) Some energy innovations, such as double glazing, insulation and highly efficient boilers, have reached the 'late majority'. Solar technology has reached the 'early majority'. However, energy-neutral dwellings are still a privilege for a small group of 'early adopters'" [CPB/PBL 2014:49, my translation].

CPB and PBL advise to connect the technological innovations to local initiatives already engaged in environmental or social concerns. The projects cited demonstrate such connections exist already since the 1990s. The following section focusses on marked differences with residents' involvement in mainstream housing.

FIGURE 8.10 IEWAN: Collective pellet heater

FIGURE 8.11 managed by residents' working group.

§ 8.6 Conclusions: lessons for the wider housing stock

This paper set out to understand the energy systems of Dutch self-managed housing initiatives. It explained why energy performance cannot be calculated with standard models. It found that participants are inclined to integrated approaches, whereas policies tend to operate in silos and technology consultants often focus on one item. Three types of lessons emerge: benefits of residents' involvement, design of systems ant intermediate scale and underused potential of pooled resources in the wider network.

The Dutch experience resonates in international initiatives for self-managed housing. Such projects can be seen as communities of practice that conceptualise environmental and energetic ambitions in an 'integrated' or 'holistic' way. The selected projects illustrate what this means for the energy system design:

- not only to reduce energy demand, but also to apply clean and renewable resources.
- beside the direct use, also taking into account indirect energy needed for the production of building material, devices and water delivery.
- low impact is not only a standard for design and construction, but also for the use and management of the buildings.
- the social dimensions of sustainability triangle, such as social inclusion and interaction, are high on the agenda.

Nevertheless, our qualitative analysis indicates that the possibilities offered by clustered self-managed housing are not fully exploited. The question whether clustered housing can be integrated into a decentralised low-carbon energy grid is technically answered, and the new pan-European interest in resident-led housing clusters offers demonstration sites for cascading, storage, local recycling and so on. The impact can presently not be quantified, because systematic programs for monitoring and categories for statistics are as yet not available. The next step needs to be a targeted collection of quantitative data, based on the proposed categories.

Moreover, the residents experience that technical design and engineering decisions are separated from social dynamic. When a technical committee is involved from the very beginning, it accumulates detailed knowledge for maintenance and exploitation, and some specialist professionals aim to integrate the advantages of clustering. This would also allow stepwise investment, progressively realising the initial vision instead of discarding it altogether. There is however a lack of general expertise, and there are legal barriers, which force initiatives to rely on classical condominium models. Consequently, the social infrastructure, which could manage for example fair billing systems, is also underutilised. New developments such as Apps could be supportive

for self-management by providing indicators, benchmarks, comparison between units, signal disruptions, or calculations of the billing system.

These lessons such as alternative forms of collaboration, management and decision-making can be applied in existing clustered housing stock, as well as for the development of isolated off-grid locations. Energy- and climate change related targets can only have significant impact with end-user involvement. But collaboration with housing associations and local authorities remains necessary to prevent collective engineering turn housing into exclusive playgrounds for the privileged, with sufficient social capital. Finally, professional culture will need to adapt: are technical consultants equipped to make decisions about utilities that match the ambitions as well as the reality of self-management in 'low-impact' housing clusters?

References energy systems

Baborska-Narozny M., Stevenson F. & Chatterton P. (2014). A Social Learning Tool - Barriers and Opportunities for Collective Occupant Learning in Low-Carbon Housing. In: *Sustainability in Energy and Buildings*, 10.

Beuken R. (2013). Country report NL. In: Maldonado E. (ed.), Implementing the Energy Performance of Buildings Directive (EPBD) - *Featuring Country Reports* 2012. Paneuropean: CA-EPBD, pp. 279–286. Available from: http://www.epbd-ca.eu/archives/669 (accessed 24 March 2016).

Bueren, Ellen van. (2009) "Greening Governance: An Evolutionary Approach to Policy Making for a Sustainable Built Environment." University of Technology, department TBM,. http://repository.tudelft.nl/search/ir/?q=subject:%22CT03.56.61%22.

Buis H. (ed.) (2000). *Duurzaam bouwen een kwestie van willen en weten. Voorbeeldprojecten duurzaam en energiezuinig bouwen* ("sustainable and energy efficient building, report on demonstration projects"). Utrecht: Nationaal DuBo Centrum

CPB, PBL & SCP (2014). *Monitor Duurzaam Nederland 2014: Verkenning. Uitdagingen voor adaptief energie-innovatiebeleid* ("Monitor sustainable Netherlands 2014: challenges for adaptive energy systems").

Chatterton P. (2015). *Low Impact Living: a Field Guide for Affordable Ecological Community Building*. Oxford: Routledge.

ECN (2012). *Energy Efficiency Policies and Measures in The Netherlands. Monitoring of EU and national energy efficiency targets*. Petten: ECN, ODYSSEE - MURE. Available from: www.ecn.nl.

Elzenga, Hans, and Annemarieke Schwencke 2014. "Energiecoöperaties: ambities, handelingsperspectief en interactie met gemeenten. De energieke samenleving in praktijk." Beleidsstudie. Den Haag: Planbureau voor de Leefomgeving,

Fromm D. (1991). *Collaborative communities: Cohousing, central living, and other new forms of housing with shared facilities*. Van Nostrand Reinhold New York.

Gram-Hanssen K. (2014). New needs for better understanding of household's energy consumption – behaviour, lifestyle or practices? Architectural Engineering and Design Management 10(1-2): 91–107.

Gram-Hanssen K. (2013). Efficient Technologies or User Behaviour, Which Is the More Important When Reducing Households' Energy Consumption? Energy Efficiency 6, no. 3 447–57. doi:10.1007/s12053-012-9184-4.

Ingle A., Moezzi M., Lutzenhiser L. & and Diamond R. (2014). Better Home Energy Audit Modelling: Incorporating Inhabitant Behaviours. *Building Research & Information* 42, no. 4 (July 4, 2014): 409–21. doi:10.1080/09613218.2014.890776.

Locatelli D., Desrues F. & Biry J.-M. (eds) (2011). *Guide Pratique de l'Auto-promotion*. Strasbourg: Association Eco-Quartier Strasbourg et CAUE Bas-Rhin.

Lucas, Paul, Kathrin Ludwig, Marcel Kok, and Sonja Kruitwagen (2016). "Sustainable Development Goals in Nederland Bouwstenen voor leefomgevingsbeleid voor 2030." Den Haag: Planbureau voor de Leefomgeving, www.pbl.nl.

Karvonen A. (2013). Towards Systemic Domestic Retrofit: A Social Practices Approach. *Building Research & Information* 41, no. 5 (October 2013): 563–74. doi:10.1080/09613218.2013.805298.

Kido H. & Nakajima Y. (2011). *Predicted Energy Conservation by Use of Common Areas in Cohousing*. Helsinki, Finland: Kogakuin University. Available at http://www.irbnet.de/daten/icond... Accessed 25 April 2013

Meadows, Donella H., Dennis L. Meadows, Jørgen Randers, and William W. Behrens (1972). *The Limits to Growth*. Washingtom DC: Potomac Associates.

Maldonado E. (ed.) (2013). *Implementing the Energy Performing Buildings Directive (EPBD)-Featuring Country Reports 2012*. Vol. 3, Concerted Action Energy Performance of Buildings. Porto, www.epbd-ca.eu.

Palojärvi A., Pyysiäinen J. & Saloranta M. (eds.) (2013). *Inspiring Stories From Ecovillages: Experiences With Ecological Technologies And Practices*. Helsinki, 2013. www.balticecovillages.eu.

Rescoop (2016). URL: https://rescoop.eu/european-project/community-power, accessed 2016.

Schwenke A.M. (2012). *Energieke BottomUp in Lage Landen. De Energietransitie van Onderaf*. Leiden: AS I-Search. Available from: http://www.asisearch.nl/energieke-bottomup-in-lage-landen (accessed 21 September 2012).

SER (2013). The Agreement on Energy for Sustainable Growth: A Policy in Practice. Social and Economic Council, September 2013. URL: www.energieakkoordser.nl

SER (2015). URL: http://www.energieakkoordser.nl/doen/engels.aspx, accessed 30-11-2015

Stevenson F., Baker H. & Fewson K. (2013). Cohousing Case Studies in the UK: Is Sharing Facilities Really Resourceful? PLEA2013 Conference proceedings. Munchen, 2013.
Stofberg F., Gommans L. and Israëls E. (2000). *Vademecum energiebewust ontwerpen van nieuwbouwwoningen*. 2de druk. Sittard: NOVEM
Subrémon H. (2011). *Anthropologie des usages de l'énergie dans l'habitat*. Paris: PUCA
Sundberg, Fredrik. *Cohousing and Resource Use A Case Study of the Färdknäppen Cohouse*. MASTER Thesis, Kungliga Tekniska Högskolan School Of Architecture And The Built Environment, 2014.
Tillie N., Dobbelsteen A. van den, Doepel D., Jager W. de, Joubert M. & Mayenburg D.; Towards CO2 Neutral Urban Planning - Introducing the Rotterdam Energy Approach and Planning (REAP). *Journal of Green Building*, Vol. 4, No. 3, summer, 2009 (103-112)
Co-Housing Research." *Urban Studies* 53, no. 10 (August 1,): 2023–40. doi:10.1177/0042098015586696.
Van Voorden en de Groot Groep and De Regie (2004) *Onderzoek kosten- en kwaliteitsvergelijking collectief partikulier opdrachtgeverschap*. SEV programma De nieuwe bouwopgave, Rotterdam: SEV
Williams J. (2005). Designing neighbourhoods for Social Interaction: the case of Cohousing. *Journal of Urban design* 10(1): 195–227.

9 A double shift of roles

Addressing Climate Change and Gender Equality

Origin of this thematic study

This chapter places co-housing in a wider context of climate change mitigation.

The study originated from a short term scientific mission to Brunell University, and contribution to the 2014 Rome conference organised by the cities and climate change working group of the COST Action 'GenderSTE'. The collaboration opened a new perspective and body of literature on gender, climate change and energy-transition, which addresses mostly the 'global south'. It enabled me to bring in the wider, global context of the re-emergence of co-housing in Europe (chapter 3) as well as taking up the challenge to change the perspective from 'victims' in poor areas to 'actors' in Europe.

The study is based on the observation that co-housing implies a double shift in roles: first, energy consumers also becoming producers, second, breaking with household stereotypes and gender roles in sharing and exchanging domestic tasks. The chapter argues that for adequate response to climate change, both need to be taken into account to overcome technocratic approaches and design effective mitigation strategies.

§ 9.1 Introduction

Comfort-standards in European housing have been going up: we demand more space, hot water, room temperature comfort and electricity for appliances for security and information in the 21st century than any century before. The amount of square metres, kWh and tons of material used for dwellings have increased steadily in the second half of the 20th century [see for example Brounen et al, 2012]. New houses are built according to energy efficiency standards, but the existing stock, especially the mass-produced post-war flats, form an 'energy leak'. Their heating systems are responsible for a large share of CO2 emissions [European Energy Agency 2015]. To cater for post-war deficiencies in the reconstruction period industrial housing was designed

for economic and household efficiency, with shared domestic spaces for example washing machines in the basement. Neighbourhoods offered housing types for all generations of households, from young families to seniors, as well as services close to home for example shops, repair, schools and medical care. Nowadays, the industrial flat-buildings in post-war estates are seen as one homogeneous type and receive much criticism, as being too small, too cheap, too standardized, noisy and offering too little comfort. The small-scale everyday services have disappeared, making way for large supermarkets, educational and health services.

Considerations about the energy consumption in housing only started after the UN Committee on Environment and Development's report introduced the term of 'sustainable development' [Brundtland et al. 1987]. Presently EU policies are built on the presumption that excessive energy consumption of houses is no longer viable in the light of climate change. New housing built in European cities needs to respond to a benchmark for the energy performance of housing: the Energy Performance Coefficient (EPC). This does not only require to increase insulation, but also to develop new technologies for energy supplies, sanitation and waste disposal equipment and infrastructure that service it (for heating, domestic activities such as cleaning and maintenance, ventilation, waste-treatment and so on). The building industry has designed technical innovations for such utilities, often supported by governmental programs. Retrofitting is one important strategy to reduce energy demand, but the housing stock continues to expand due to demographic change and higher standards of living. New models need to be developed, and while the architectural solutions are available, current housing provision structures are slow in implementing them. This condition, as well as inaccessible housing markets in urban Europe, lead groups of households to initiate housing projects aiming for 'low-impact living'. Co-housing is an umbrella term for a residents-led housing practice that aspires to respond to contemporary standards of living with low-impact solutions. These include sharing rooms, artefacts and devices, exchange services such as transport; as well as creating low-impact buildings by using environmental, recyclable and energy-efficient materials and technology [Pickerill, 2016]. Co-housing projects consider that equal social relations, including gender equality [Vestbro and Horelli, 2012], are part of sustainability. They therefore include a range of alternative diverse lifestyles [Wohnbund, 2015].

FIGURE 9.1 Lancaster co-housing offers 'low-carbon workspace with a community feel' [Source: Tussen Ruimte, 2016]

Co-housing initiatives represent an alternative model whose implementation nevertheless needs to follow mainstream trajectories, such as applying for building licenses. The final project often needs to make compromises, not necessarily fulfilling the ideal design. What 'gets lost' or needs to be 'compromised' on the way may be frustrating to the participants, who follow a different narrative (prioritizing for example social interaction and energy-saving) to that of established planning and housing institutes (who might prioritize cost-efficiency and standardization). These different narratives are interesting to explore for researchers, as they reveal how mainstream or institutional practices such as the housing market, energy-calculation or town planning, contain assumptions such as gender relations in the household. Housing plans, for example, could be different depending on whether they are designed in projects with the nuclear/breadwinner family as target group or if they are planned by initiatives supporting gender equality, such as Frauen-Werk-Stadt in Vienna [Damyanovic, Reinwald and Weikmann, 2013]. Likewise, devices for an intelligent use of renewable energy (for example, to use the washing machine while the solar panel works) could be designed as a built-in mechanism rather than assuming that someone (a mother, a pensioner) is at home all day to push the button. Alternatively, and

suitable for homes of commuting career-people, domestic systems could be operated from an app. This chapter therefore looks at the planning characteristics, rather than the ideals or the social interaction, of the co-housing model, to understand how the gender-equality and low-impact ideals can be put into practice.

§ 9.2 Aim, research questions and method

This chapter explores the following questions to examine how far the co-housing initiatives succeed in materializing feminist and environmental ideas:

- Does co-housing offer a different model from other low-carbon housing proposals?
- How are concepts of gender equality and low-impact living influencing co-housing design?
- When do these differences challenge and cause friction with the general (housing, energy) offer?

This chapter therefore focuses on the mitigation aspect of climate change, namely the necessary transition from relying on fossil fuels to developing renewable energies, and how that energy transition affects housing and vice versa. There have been ample technical studies in this respect, but in this case the focus lies on looking at design features through a gender lens.

The chapter is based on a combination of two strands of research: on the one hand, literature and empirical research into co-housing as part of a PhD project that included an in depth study of nine co-housing projects in the Netherlands, exploring the building archives, interviewing of residents and some of the professionals that worked with them (Tummers 2015A, 2015B), and on the other hand participating in international working groups and seminars as well as numerous consultancies on gender planning. Both themes involve almost 10 years of looking at criteria for urban design, analysing housing plans, policy documents and toolboxes, as well as speaking with planners and officials about best practices, a selection of which figures below.

Both strands also provide a reflection on twenty years of practice in environmental engineering in the construction sector. Writing from the perspective of an engineer (rather than from a social science background) focuses on the 'hardware': the buildings; their structure, physics and layout. These are partly the consequences of the social architecture of co-housing and have an impact on energy consumption of households (see for example Kido, 2011; Chatterton, 2014; Stevenson et al, 2013;

Marckmann, 2012). This chapter will rather raise instrumental questions, for example around effectiveness and operational systems in practice.

The chapter is structured as follows: the following section frames the questions for co-housing, gender-aware planning and climate change, exploring how connecting these fields might advance thinking about climate change strategies in a European context. The next section then looks at co-housing projects in general: what they are, why they emerge, and, following this, the key characteristics are specified. The focus then turns to the extent to which co-housing initiatives conceive energy transition and gender equality respectively. To understand what makes co-housing different from mainstream clustered housing projects, representative empirical material is presented, reflecting on the overlaps between the strategies for climate change and gender equality as found in co-housing practices. This enables a reflection on whether co-housing can be seen as a feminist, ecological practice of housing. Finally the conclusions resume the lessons learned to derive new, gender sensitive criteria for spatial planning in the light of climate change policies.

§ 9.3 Links between climate change, gender and co-housing

Identifying the planning difficulties that arise when realising a co-housing project may be helpful to smooth the complex planning and building process for new co-housing initiatives. In addition, lessons learned can extend beyond the project level to the higher scales of city or region, such as housing policies and strategic development plans. For example: how do self-managed water recycling systems function? For what reasons are one sustainable building material preferred over another? If co-housing experiences become part of such policy and planning documents, the social and sustainable models that co-housing is based on also enter mainstream domains. Identifying assumptions of gender-roles or stereotypes may then help to advance 'gender-sensitive' planning. The central issue for gender mainstreaming is the combination of care and waged work[91]. In spatial planning this is often interpreted as the need to create better conditions for women as 'disadvantaged' group. This can lead to partial solutions, such as safe streets: in itself a useful goal, although most gender-based violence occurs in the home. In complex planning practice, gender planning is regularly confronted with such gaps between gender mainstreaming objectives and

91 http://standard.gendercop.com/about-the-standard/what-is-gender-mainstreaming last visited 2 May 2016

the need to make strategic choices. Looking back on the first gender planning toolkit, Moser qualifies the "simplification and perceived 'technification' of gender planning (w)as a conscious decision in the highly hostile climate in which it was developed both to reach practitioners, and to provide operational tools they could implement." (Moser, 2014: 20). A more holistic approach is developed in the 'city of proximity'[92]. This concept, which will be further explained below, argues that a (re-)mix of functions such as housing, shops, education and recreation has a positive impact on reconciliation as well as safety, and the environment (Sanchez de Madariaga and Roberts, 2012). Amongst others, Alber (2015 p.33) has pointed out that gender planning and climate change come together in the concept of the city of proximity.

The dilemmas for gender-sensitive or feminist planning strategies are similar to those which Resurrección quotes regarding climate change: "Feminists, in short, have had to embrace simplification of identities and interests in order to insert gender agendas into institutions that otherwise have different priorities (Cornwall, Harrison, & Whitehead, 2007)" *(Resurrección, 2013: 37).* MacGregor elaborates further and signals four shortcomings of the mainstream narrative around gender and climate change which:

1 victimises poor women in the global south;
2 tries to fit into the quantitative discourse;
3 cannot avoid confirming the bi-polar gender divide and finally
4 does not take a normative position

(MacGregor, 2010: 226).

MacGregor concludes that the root causes of climate change are not challenged, and gender-sensitive approaches remain locked in a circle of addressing women as victims, with empowerment strategies that do not challenge the powers that be, nor the human exploitation of the planet.

Looking at co-housing provides a new perspective for these four deadlocks:

1 Climate change and gender inequality are concepts often primarily associated with specific groups of women in the global south. Co-housing as an emerging European phenomenon relates to a mixed, albeit predominantly middle class population (Denefle and Bresson, 2015; Krokfors, 2012). Both men and women take action, stepping out of the passive role of consumers, within a context of western culture and

92 which overlaps to some extent with the 'compact city', a more familiar concept to urban planners and designers

standard of living. Thus, co-housing not only concerns environmental activism but also the re-consideration of consumerism, and the division of labour in waged work and domestic tasks.

2 So far the co-housing movement is based on qualitative assessment, and contrary to many climate change policies it hardly attempts to assess its impact in quantitative terms. Whereas this gives room for so-called 'soft' or 'fluid' approaches, there are some drawbacks such as the lack of insight in effectiveness in reducing CO_2 emissions or energy-demand, and difficulties in comparing project results. Claims that solutions are inclusive and low-impact cannot be fully verified. This imbalance is not typical for co-housing, but it illustrates the need for a combination of quantitative and qualitative research.

3 Co-housing discourse promotes gender equality, often emphasizing the interests or the contributions of women, thereby involuntarily maintaining the dual gender divide and the male standard [See for example Sangregorio 1995, Vestbro & Horelli 2010]. Most projects aim to create a mixed group regarding income, generation, ethnicity, household composition, and treate all members equally. However, often there is a gap between intention and practice, due to external factors such as housing allocation rules, and time-budgets.

4 Co-housing networks and projects clearly take positions and act upon them. Part of that position is: think global (an awareness of the 'root causes') act local (an awareness of the scale of change they can achieve on a daily basis), expressed in concepts such as 'Fair Trade'.

With these considerations, the following sections sees co-housing as an instructive practice, that could produce lessons to advance thinking about the importance of a gender perspective in housing design or in climate mitigation.

§ 9.4 The re-emergence of co-housing in Europe

Co-housing is a term for groups of households that together plan and build a housing project. This form of housing provision is not new, but since 2000 is re-emerging in most EU countries (Wohnbund, 2015). Even when including a large variety of project-types under the umbrella of collaborative housing, the absolute number of co-housing projects is small: estimated between 0,5-17% of housing stock in different EU-countries (Tummers 2015A). Nevertheless, since the turn of the century their number is increasing rapidly, raising the interest of researchers and local administrators (Droste, 2015; Locatelli et al, 2011). In co-housing projects, (future) residents are the initiators, and remain in charge of the project-management, although not always as

home-owner and often in collaboration with institutional partners such as housing corporations, planning departments and funding agencies. Another feature that makes co-housing different is sharing common activities and spaces, with variable degrees of intensity (Krokfors 2012, Tummers 2015a, Fromm 2000). Some are based on pragmatic considerations, others on idealistic principles, but all identify with environmental concerns, at least in their initial goals and external profile (such as website or criteria for new members). The articulation of the projects' objectives is specific for each generation of initiatives. Some projects have been initiated more than thirty years ago, and in the 1980s 'climate change' was not part of general discourse. The new term 'sustainability' for environment conservation strategies began to spread only after the earlier mentioned UN report (Brundland, 1987

In the meantime, the context has changed: the technical understanding and equipment of home-engineering has become more sophisticated, leading for example to housing models such as 'energy-neutral' or '*Passivhaus*'. Energy-targets have been agreed by EU member states and been translated into national policies (Maldonado 2012). Calculation methods such as the now mandatory Energy Performance Coefficient (EPC), a model to estimate the building-related energy-demand during the lifespan of the building, did not exist. This means that comparison between projects for energy use is not straightforward, and always needs to be seen against the standards of the period in which projects have been built. Also, over the course of time different 'green' criteria apply, which makes it complex for different generations of projects to establish if their claim for being sustainable is founded.

A review of post-2000 co-housing literature revealed that there are many expectations attached to co-housing (Tummers 2015a). The approach of the initiatives is to create healthy and empowering environments, and many case studies highlight these qualities, emphasizing especially the social benefits, for example sharing care for young children or the elderly (see for example Jarvis, 2011; Labit, 2015). Their ambitions correspond to contemporary urban policies such as social cohesion, care for the elderly and neighbourhood regeneration (Fromm 2012). o Gradually the potential of co-housing is being recognized by local authorities. There are examples of residents-led urban development, such as the former French Quarters in southern Germany, through the mobilization of *Baugruppen;* expansion of new-town Almere in the Netherlands based on small scale lots, or integration of co-housing initiatives in French 'eco-quartiers' (Bressson and Tummers, 2014). These developments demonstrate that self-managed housing does not mean planning without urban planning department and Droste even argues that in the absence of a municipal framework, co-housing initiatives risk becoming defensive, introverted and elitist instead of being socially inclusive and technically low-impact (Droste 2015). At the same time, the relevance of co-housing does not lie in accommodating large quantities of households, but in

opening up institutional planning, transforming the production of housing toward bottom-up or resident-involved processes and presenting a more ecological and human model (Tummers 2015b).

Residents' groups as clients are relatively new in housing provision and the planning process. Therefore, responsibilities and decision-making of partners involved in design and engineering as well as operation and administration of housing need to be redefined. For example: Housing Associations as clients have more investment capacity, and are bound to housing distribution regulations, whereas inhabitants are more involved with the neighbourhood and often accumulate more knowledge about the everyday environment. Since the co-housing model re-introduces intermediate space as a buffer or meeting zone, the regulations and building methods that are based on strict division between 'private property' and 'public space' need to be re-interpreted (Williams 2005). Mixed tenure or collective property requires new forms of finance, liability and interaction (Fenster, 1999). Mutualisation and joined resources open possibilities not only for common gardens and play-grounds but also for installing local circuits for water recycling or so-called 'cascading': waste energy (for example surplus heat out of industrial processes) is re-used in nearby locations (for example to heat glasshouses for local for production) [Tillie & vd Dobbelsteen, 2014]. Seen as niche innovators (Seyfang and Haxeltine, 2012), co-housing could point the way to potential innovations of future housing provision to meet objectives to mitigate CO_2 emissions. Some of these innovations will be further explained below.

§ 9.5 Typical co-housing planning characteristics

Although every co-housing project is unique, there exist some common characteristics. To allow for comparison, the projects referred to in this chapter are located in medium size towns (in the Netherlands that means between ±125.000-350.000 inhabitants), and different regions. European metropoles have a specific history of co-housing: as part of a strong squatters' movement (Hamburg, Amsterdam), historically representing a large share of subsidized housing (Berlin, Vienna) or as a response to high demand driving up prices on the housing market (Budapest, London). Rural (remote) self-sustaining 'eco-villages' are not included, because their characteristics in terms of connection to the energy-grid, and energy used for transport, or food-production, are very different.

Most of the projects concern new constructions, but re-use of buildings also occurs. This leads to a tentative profile for co-housing (see also Figures 5.1-4): In Europe,

a typical co-housing project consists of approximately 20-40 individual, fully equipped units. Except for co-housing for seniors, there is a mix of household size and composition resulting in mixed typology and sometimes mixed tenure. Occasionally smaller subgroups are embedded in the larger project. The majority of projects are low-rise, with terraced 2-3 floor houses and/or a 3-4-floor apartment block, built around a garden or courtyard for common use. A modular design system can bring cost efficiency creating a collective basic structure and optional individual extras (this also allows for mixed income). Besides homes, some offices or workshops for creative industry or care may be included. All projects include shared spaces, such as gardens, playgrounds, laundries, guest-rooms, car parks, bicycle storage, community kitchens, meeting rooms and/or study-music-play rooms, in the build volume or as a separate 'common house'.

FIGURE 9.2 Bongerd (Zwolle): mixed typology; mixed use; mixed tenure but harmonised architecture. [picture: Tussen Ruimte, 2014]

Building materials vary from one country to another, but residents seek to use eco-materials, as far as possible within budget constraints (Bresson and Denefle, 2015; Chatterton, 2014, Locatelli et al 2011). The field-study on nine projects in the Netherlands showed that institutional partners are not always prone to experiment. Also, pre-investment in common utilities is not often supported by banks and projects fall back on individual gas-heaters as feasible, low-risk options (interview in the Netherlands, and, for the UK, see also Chatterton, 2014). Building regulations and requirements may also limit the possibilities, especially for applying new materials before they have secured mandatory health and safety certificates. Recently, several projects in Germany, France, the UK and the Netherlands have started to experiment with straw-bale construction[93] but most others use more standard methods to achieve high insulation values. Almost all use solar energy, and further renewable options may include a common heatpump, heat-power-exchange or re-use of waste-warmth.

The re-use of rainwater in various forms, and on-site water purification if the plot-size allows, are amongst preferred and successful options observed during the field-study. One Dutch project, built around a 'common' in 1995, formed an association of home-owners around the public land. The residents' association manages the common garden as a whole and receives a small yearly sum from the municipality for maintaining the part that is public property (see Figure 9.3). In exchange the garden is open to the neighbourhood. This does occasionally cause tensions, for example when children outside the project use the ecological playground the residents have built, they may not be aware that the vegetation is also used for water purification, and vulnerable to pollution. The residents' association of this project maintains an internal drainage network that captures rainwater and re-distributes it for toilet flushing and washing machines. Every household around the common is connected both to the general drinking water grid but uses about 50% through the internal rainwater against the same fee. The financial benefits, after maintenance costs, are used to maintain the common house[94].

93 See for example Netherlands: http://www.iewan.nl/ecologisch/; UK: http://www.lilac.coop/; France: France:https://leszecobatisseurs.wordpress.com/ Germany: Sieben Linden http://www.siebenlinden.de/index.php?id=52&L=2

94 http://www.middenhuis.nl/vwz.html

FIGURE 9.3 Figure 9.3: 'The green common', built in 1995 (pictures: Tussen Ruimte, 2012

FIGURE 9.4 purification & playground in garden

§ 9.6 Co-housing and energy-transition

The fossil fuels-based economy is centralized in one-sided networks, whereby supply departs from large plants, large supply companies and often state-controlled delivery hubs[95]. Such networks have a high rate of loss in transport and accumulated power through extensive distribution networks. Renewable energy production is characterised by decentralized sources and requires networks that can absorb fluctuations in supply and demand at the same time (so-called 'smart grids'). The EU funds extensive research into new appliances and software that can regulate such 'smart grids' and helps the consumer with efficient equipment, smart houses and self-reading meters[96]. Until recently, such programmes were exclusively technical, meanwhile there is more understanding that new technology is not effective when it does not involve end-users. This shows the relevance of co-housing initiatives as 'living labs'.

Since the 1980s, housing collectives have been responding in different ways to the environmental challenges. Co-housing initiators, operating from the user perspective, take an integrated view, not only towards considering the built volume, but also mobility, food and goods consumption and other components of the environmental 'footprint' of everyday life. The emphasis as well as the intensity and standards the project aspires to may vary, however there is a general concern, if only to reduce the

95 http://ec.europa.eu/energy/en/topics/infrastructure

96 see for example: http://ec.europa.eu/energy/en/topics/markets-and-consumers/smart-grids-and-meters/smart-grids-task-force

energy bill (Baborska et al, 2014; Marckman et al, 2012; Locatelli, 2011). Following the environmental ambitions of co-housing initiators, many co-housing projects have become micro-laboratories for energy transition in housing. The energy '*prosumers*' join forces to not only re-negotiate with suppliers (to obtain greener energy for example) but also to experiment with new technologies such as solar collectors in the 1980s and airtight 'passivhaus[97]' in the early 2000s. Besides, a number of projects organize educational activities and share their experiences beyond the project membership (for example on the annual European Cohousing Open Door Day in May). Energy labels are designed for the individual unit, and depart from standardized patterns of use, for example a heating pattern following a 9-5 job, and lower temperatures for bedrooms even if these are often places for homework. This makes it difficult to assess if co-housing is more or less energy-demanding. Although there is to date very little systematic research into the engineering aspects of co-housing, there is ample evidence of applying 'new' technologies, such as solar collectors when these were first introduced, more than average insulation materials, collective heating systems, and rainwater recycling systems. Building on current experiences, there is real potential for energy saving as well as implementing renewable energy sources. But there are also reports of failing technology, or replacement of experimental by conventional systems where the underlying motives are not fully clear or known to the residents.

The residents-steered initiatives fundamentally change the classic relation between producer, energy supplier and consumer. They exchange services and goods that are otherwise supplied by retail, industry or institutions, for example food, clothing, rides, care-assistance, education or (solar) energy. Most of such activities are 'neighbourly' exchanges, and still relies on the main energy grids in order to function. When the neighbourhood exchange grows, it meets a threshold from where it will be considered at par with established suppliers. It then enters an institutional realm of safety regulations, reliability, taxation and feed-in tariffs. In the present situation, this realm offers mostly solutions for the individual consumer and large-scale produce industry whch are not alsways suitable for self-managing collectives [see for example: Tillie et al, 2014; Rahimian, 2015].

Considering co-housing initiatives as '*prosumers*' is promising for a number of reasons: first, from an engineering point of view, co-housing as a cluster forms the intermediate level between grid and individual unit. In a network of decentralized and unstable energy production, such medium-size hubs are potentially a place to mediate between

97 for technical standards see for example http://www.passivhaus.org.uk/

peaks in demand and peaks in supply. Second, technically, the storage of energy is an important issue for renewable sources, because they tend not to be constant in supply and not synchronized with use. Peaks of supply (for example on sunny days) need to be buffering for peaks in demand (when the lamps go on at night). Cities like Rotterdam, Oslo and Milton Keynes promote electrical transport for this reason, to consume the solar power surplus while reducing noise and emissions by conventional transport. Most co-housing projects have shared cars, laundries, and so on which could achieve similar results.

Third, like home-owners, co-housing initiatives are in charge of their living environment: maintaining gardens, buildings, and utilities, including the energy system, and often seek to do this with low environmental impact. Decisions of a community can have more impact than individual decisions, and they may concern energy allocation. Examples are: peak times management by shared e-cars, priorities of daytime washing to take advantage of photovoltaic power (PV), and cooling food supplies in common storage. Finally, the dynamic of sharing creates opportunities for learning or developing together, but this strongly depends on the efforts of the co-housing members (Baborska et al, 2014). For example, technicians argue that 'residents can't handle the ventilation system' to explain the results that fail to meet expectations (Gram-Hanssen, 2014). Co-housing residents have proven the contrary: they are willing and capable to organise the technical management mutually. The applied technologies and engineering do not in themselves need to be innovative. Rather it is the specific combination, produced by the location, the patterns of use and sharing, and the steering residents group that makes the project effective. Low-tech mechanisms that can be handled easily by residents can be more effective than electronics whose functioning very few people are capable of controlling or supervising.

Co-housing, then, makes visible how closely social and technical aspects of housing are intertwined. But where is the gender-perspective?

§ 9.7 Co-housing and gender

Based on the Swedish history of co-housing, Horelli writes:

"Literature on the history of cohousing from the gender perspective (see Vestbro & Horelli, 2012) provides evidence that cohousing increases equality between women and men by making the domestic chores visible and thus sharable by both sexes." [Horelli, 2013: 49]

Apparently in Scandinavian *cohousing,* gender equality is reached through the re-division of domestic labour (cooking!). There is however, no systematic survey available to support this. Other aspects of gender-equality, such as body integrity, a voice in decision-making and equal pay, are even less discussed in academic literature. As clearly, co-housing cannot achieve a re-division of labour, roles & inequality, by new planning criteria alone, gender equality needs to be explicitly on the collectives' agenda. Does it question the assignment of gender-specific skills, for example in dividing maintenance tasks? What is the gap between rhetoric and practice? How do the projects benefit from breaking with gender stereotypes? Or are questions such as 'who does the cleaning' considered marginal in the light of major issues such as climate change? Illustrative is Metcalf's observation that 'Within most intentional communities, however, we find traditional gender roles being followed by women and men' (Metcalf, 2004: 100). More recently, Jarvis (2012) showed that this applies to *Christiania (*Denmark*),* and Pickerill [2015] draws a similar conclusion based on empirical research into a number of eco-housing initiatives in different countries.

The collectivisation of domestic labour has been associated with gender-equality since the first planning discussions. Already in the 1900s, Charlotte Perkins Gilman and later European architects and reformers such as Alva Myrdal proposed the collective kitchen [Hayden, 1980, Vestbro and Horelli 2012]. The idea of 'eating out' as alternative for home-cooking has been taken further by modernist architects such as Le Corbusier [Jarvis 2011, Denefle et al 2009]. Dolores Hayden includes a co-housing model in the image of a 'non-sexist city' (Hayden, 1980), while Roberts discusses the British 'public kitchens' in the post-war period (Matrix 1984). In the 1990s a Scandinavian working group 'New Everyday Life' proposed co-housing as a model with the potential to alleviate women from domestic tasks (Horelli & Vepsä, 1994; Sangregorio, 1995). Since then, several projects have been realised following the model of the 'kollektivhus' (Sweden) 'Cohousing' or 'Centraal Wonen' (The Netherlands) model[98], in which the sharing of cooking and common meals structures the community (Vestbro and Horelli, 2012). Men and women in these projects participate equally in these visible, formalised tasks, according to empirical evidence (Vestbro 2010). However, shared meals in co-housing outside Scandinavia are less common practice. Moreover, domestic work comprises much more activities, such as cleaning, child-care, and washing. How far co-housing makes these visible and thus leads to sharing of reproductive responsibilities is an impact that has not been demonstrated yet, although Horelli & Wallin claim that

98 www.kollektifhus.nu; www.cohousing.org.uk; www.lvcw.nl last accessed 2 May 2016

"The New Everyday Life-approach, which sought to embed the self-work model of cohousing in the neighbourhood context, still seems to be valid. It is currently being applied in a number of gender-aware neighbourhood projects in Germany, Spain, Austria, Italy and Finland" [Horelli & Wallin 2013].

The collectivity and scale of co-housing mediates between the private, intimate sphere, and the public domain. The culture of interaction and attitudes associated with activities in each of the domains is different, and gendered to a high degree (Rosaldo 1980). To bridge those spheres, co-housing environments potentially offer a new learning and negotiation ground. Nevertheless, co-housing offers insight in the spatial implications of the (partially) collective household model. Besides (often professionally equipped) common kitchens, this includes laundries, playgrounds, food cooperatives, maintenance tools and garden sheds, transport and 'taxi-services'. And domestic tasks do not stop at the front door. At present Gender Mainstreaming[99] emphasizes the importance of 'reconciling work and home' and creating equal access to the labour market through equal division of domestic tasks. Gender Mainstreaming promotes the visibility of 'care' and its unpaid contribution to the economy. For this reason, gender aware planning promotes the 'city of proximity concept' mixing jobs, residential and amenities at close distance to reduce travel times and facilitating the combination of job & home (Gilroy & Booth 1999). Its interests overlap with environmental concerns, in reducing CO_2 emissions from transport and creating accessible public space (see for example Lehmann, 2016). In other words, at a different scale, gender-aware approaches to urban planning share two central concepts with co-housing: everyday life as a constituent process, and the intermediary level of collective or shared spaces between private and public, as important conditions for sustainable spatial development. As Jarvis puts it, there is much to learn from co-housing about the interaction between social and spatial structures:

"By drawing attention to the multiple temporalities that shared amenities and collective decision making open up, (...) I reject the suggestion, often made from architectural observations alone, that proximity and social contact are sufficient to cultivate conviviality and cooperation between residents." (Jarvis 2011: 573)

99 "Gender mainstreaming is the integration of the gender perspective into every stage of policy processes – design, implementation, monitoring and evaluation – with a view to promoting equality between women and men" http://ec.europa.eu/social/main.jsp?catId=421&langId=en (accessed 12 March 2015) for more information see also http://eige.europa.eu/gender-mainstreaming/what-is-gender-mainstreaming (accessed 26 july 2016)

On the other hand, gender-aware approaches for planning make it clear that not only the household chores, but all aspects of housing are 'gendered': for example: the choice of location (that involves mobility questions); mixed use; ownership & tenure; decision-making & participation dynamics; priority criteria in design, and maintenance, and so on (Kennett and Chan, 2011). Associating the care-economy solely with everyday and small-scale practices at project-level, does not yet reveal how co-housing responses for gender equality may be relevant for the housing provision institutes. The implicit gender assumptions of spatial planning remain unchallenged.

§ 9.7.1 Conclusions: co-housing, lessons learned

Allowing children to grow up in a protected low-carbon footprint area with friendly neighbours and all urban facilities nearby seems to be the ideal model for European young households today. Co-housing initiatives realise this ideal by collective action, rather than individual consumption. Co-housing is an invitation to move out of the passive house and the passive role: it 'empowers' rather than 'victimizes'. This makes co-housing different from other low-carbon housing proposals, but how far is the co-housing concept able to address climate change and equal rights structurally? Foremost, co-housing projects need to be contextualised to understand the gaps between reality and practice. One project does not change the building industry, but there are important lessons in the misfits with planning requirements that can be brought to a structural level.

Even if each inhabitant in every co-housing project throughout Europe fully achieved the low footprint they aimed for, quantitatively this only means a small indent on climate threats. Instead, the relevance of co-housing initiatives lies in its attempt to put into practice what for most policies remains on paper. The trial and error process can be highly instructive to connect national and global strategy concepts to the everyday needs, aspirations and realities of urban households. Co-housing demonstrates that the application of new technologies and renewable fuels cannot be seen as separate from the domestic practices if its impact is to be optimised. This social aspect, assuring the understanding and enabling self-management of the installations, is often ignored in the design engineering. Technology-based approaches such as '*passivhaus*' include sophisticated technologies, and require a specific knowledge as well as active handling by its inhabitants. Co-housing residents are motivated to engage with technology, and to participate in experiments with innovative energy-systems. Institutional housing partners are often more dependent on legal and technical structures and less prone to experiment.

The building and engineering industry is still very male dominated, and it appears that the redivision of domestic tasks has been more successful than the redistribution of technical maintenance. Even when more women participate, the type of knowledge that circulates and the ways it is shared do not necessarily correspond to the priorities of residents, or allow for different ways of knowledge and communicating. But different attitudes towards technology and the collective learning process in co-housing do not automatically break with gender roles. Further studies are needed on issues of visibility, leadership and decision-making in collectively self-managed housing, and on stereotyped gender roles in particular. Such data would provide insight in the limitations of spatial strategies and their impact on social relations. Providing shared spaces and utilities creates possibilities that are not available in the current single-unit based planning.

Housing and planning professionals must be aware of how the built environment enables or hinders the choice of lifestyle, yet ultimately how these options are used depends on the inhabitants. For co-housing to represent a 'double shift in roles' and to challenge the 'root causes of climate change', it will be necessary not only to overcome technocratic approaches but also to strengthen the normative stand on gender relations. It is vital that new theory is developed on the gender dynamic in housing practices, as gender equality may be the key to resolving challenges climate change presents in a just manner.

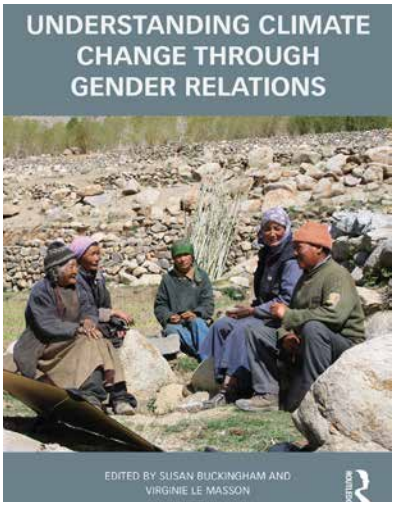

FIGURE 9.5 Cover of Understanding Climate Change

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References A double shift in roles

Alber, Gotelind. 2015 Gender and Urban Climate Policy Gender-Sensitive Policies Make a Difference. Bonn: GIZ; UN Habitat; GenderCC,

Baborska-Narozny M, Stevenson F and Chatterton P (2014) A social learning tool - barriers and opportunities for collective occupant learning in low-carbon housing. Sustainability in Energy and Buildings: 10.

Brounen D, Kok N and Quigley JM (2012) Residential energy use and conservation: Economics and demo graphics. European Economic Review 56(5): 931–945.

Brundlandt G et al. (1987) Our Common Future. Report of the World Commission on Environment and Development. United Nations. Available from: http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf (accessed 2 July 2014).

Buis H (ed.) (2000) Duurzaam bouwen een kwestie van willen en weten. [report demonstration projects sustainable building. Utrecht: Nationaal DuBo Centrum.

Chatterton, Paul. "Towards an Agenda for Post-Carbon Cities: Lessons from Lilac, the UK's First Ecological, Affordable Cohousing Community." International Journal of Urban and Regional Research 37, no. 5 (2013): 1654–74. doi:10.1111/1468-2427.12009.

Damyanovic D, Reinwald F and Weikmann (2013) Handbuch 'Gender Mainstreaming in der Stadtplanung und Stadtentwicklung'. Werkstattbericht 130, Viena: Magistrat der Stadt Wien, Stadtentwicklung und Stadtplanung. Available in english from: *https://www.wien.gv.at/wienatshop/Gast_STEV/Katalog.aspx?_jumpie#magwienscroll* [last visited 1 august 2016]

Denefle S, Bresson S, Dussuet A, et al. (2006) Habiter Le Corbusier. Pratiques sociales et théorie architecturale. Collection 'Le sens social', Rennes (Fr): Presse Universitaire de Rennes.

Droste, Christiane. "German Co-Housing: An Opportunity for Municipalities to Foster Socially Inclusive Urban Development?" Journal of Urban Research and Practice 8, no. 1 (March 2015): 79–92.

European Environmental Agency (EEA) (2015). The European Environment – State and Outlook 2015. Copenhagen: EEA,

Fenster M (1999) Community by Covenant, Process, and Design: Cohousing and the Contemporary Common Interest Community. Journal of Land Use & Environmental Law 15(1): 3–54.

Fromm, Dorit. "Seeding Community: Collaborative Housing as a Strategy for Social and Neighbourhood Repair." Built Environment 38, no. 3 (2012): 364–94.

Gilroy, R. & Booth, C. (1999) Building Infrastructure for Everyday Lives European Planning Studies, 7(3), pp. 307-324.

Gram-Hanssen K (2014) New needs for better understanding of household's energy consumption – behaviour, lifestyle or practices? Architectural Engineering and Design Management 10(1-2): 91–107.

Hayden, Dolores (1980) "What Would a Non-Sexist City Be Like? Speculations on Housing, Urban Design, and Human Work." Signs: Journal of Women in Culture and Society 5, no. 3, Supplement (spring 1980): S170–87.

100 Tummers, L. 'Co-housing: a double shift in roles?' Chapter 14 in: S. Buckingham & V. le Masson (eds): Understanding Climate Change through Gender Relations Routledge, April 2017. ISBN: 9781138957671 / 9781315661605

Horelli, Liisa, and Kirsti Vepsä. "In Search of Supportive Structures for Everyday Life." In Women and the Environment, edited by Irwin Altman and Arza Churchman, 201–26. New York: Plenum Press, 1994.
Jarvis, H. Against the 'tyranny' of single-family dwelling: insights from Christiania at 40. Gender, Place & Culture: A Journal of Feminist Geography 2012 20(8): 939–959,
Jarvis, H. Saving Space, Sharing Time: Integrated Infrastructures of Daily Life in Cohousing. In: Environment and Planning 2011. 43, no. 3, pp.560–77.
Kennett, Patricia, and Kam Wah Chan, eds. Women and Housing: An International Analysis. London & New York. Routledge, 2011.
Kido, Hiromi, and Yusuke Nakajima. (2011) "Predicted Energy Conservation by Use of Common Areas in Cohousing," 6. Helsinki, Finland: Kogakuin University, 20111008. http://www.irbnet.de/daten/icond...
Krokfors, Karin. "Co-Housing in the Making." Built Environment 38, no. 3 (2012): 309–14.
MacGregor S (2010) Gender and Climate CHange: from impact to discourses. Journal of the Indan Ocean Region 6(2): 223–238.
Maldonado E (ed.), Implementing the Energy Performance of Buildings Directive (EPBD) - Featuring Country Reports 2012, Paneuropean: CA-EPBD, pp. 279–286. Available from: http://www.epbd-ca.eu/archives/669 (accessed 24 March 2016
Marckmann, Bella, Kirsten Gram-Hanssen, and Toke Haunstrup Christensen. "Sustainable Living and Co-Housing: Evidence from a Case Study of Eco-Villages." Built Environment 38, no. 3 (2012): 413–29.
Matrix (1984) Making Space: Women and the Man-Made Environment. London and Sydney: Pluto Press.
Lehmann – Steffen (2016) "Transforming the City towards low-carbon Resilience" the second lecture in the 3rd season of the Habitat UNI Global Urban Lectures: http://unhabitat.org/urban-knowledge/urban-lectures/
Locatelli, Daisy, François Desrues, and Jean-Marc Biry, eds. Guide Pratique de l'Auto-Promotion. Strasbourg: Association Eco-Quartier Strasbourg et CAUE Bas-Rhin, 2011
Pickerill J (2015) Bodies, building and bricks: Women architects and builders in eight eco-communities in Argentina, Britain, Spain, Thailand and USA. Gender, Place & Culture 22(7): 901–919.
Rahimian, Mina Lisa Domenica Iulo & Daniel Cardoso Llach (2015) The Case for a Collaborative Energy Sharing Network for Small Scale Community Microgrids" p. 173-180 in: Proceedings Architecture and Resilience on the Human Scale sheffield 10-12 September 201 2015
Resurrección, Bernadette P. (2013) "Persistent Women and Environment Linkages in Climate Change and Sustainable Development Agendas." Women's Studies International Forum 40 (September 2013): 33–43. doi:10.1016/j.wsif.2013.03.011.
Rosaldo MZ (1980) The Use and Abuse of Anthropology: Reflections on Feminism and Cross-Cultural Understanding. Signs 5(3): 389–417.
Sanchez de Madariaga, Inès, and Marion Roberts, eds. Fair Shared Cities. The Impact of Gender Planning in Europe. Ashgate, 2013.
Sangregorio, Collaborative housing: the home of the future? (1995) in:. L.Ottes, E.Poventud, M. van Schendelen & G. Segond von Banchet (Eds.) Gender and the Built Environment, pp. 101-114 (Assen, The Netherlands: Van Gorcum).
Seyfang G and Haxeltine A (2012) Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions. Environment and Planning C: Government and Policy 30: 381–400.
Stevenson, Fionn, Hannah Baker, and Kate Fewson. "Cohousing Case Studies in the UK: Is Sharing Facilities Really Resourceful?" In PLEA, (total 7, no page#). Munchen, 2013.
Tillie, Nico, Andy van den Dobbelsteen, and Sebastiaan Carney. "Planning for the Transition to a Low-Carbon City: A New Approach." In Low Carbon Cities: Transforming Urban Systems, edited by S. Lehman, 173–90. London: Earthscan, 2014.
Tummers, Lidewij, ed. (2015B)"Taking Apart Co-Housing. Towards a Longterm Perspective for Collaborative Self-Managed Housing in Europe (Introduction to the Special Issue)." Urban Research and Practice, 8, no. 1 (March 2015).
Tummers, Lidewij. (2015A) "The Re-Emergence of Self-Managed Co-Housing in Europe A Critical Review of Co-Housing Research." Urban Studies, May 23, 2015, 1–18.
Vestbro D and Horelli L. Design for Gender Equality: The History of Co-Housing Ideas and Realities. Built Environment 2012 38(3): 315–335.
Wohnbund, e.V, (ed). Europa Gemeinsam Wohnen | Europe Co-Operative Housing. Berlin: Jovis, 2015.

10 Professionalising co-housing: which direction for the growing expertise?

A comparative perspective in France, UK, US and the Netherlands

Summary

This chapter is based on interviews and fieldwork between 2015-16 in the UK, the Netherlands, France and the US, performed with dr Melissa Fernandez[101]. The central question is: in what ways is the cohousing sector 'professionalizing'? Does the professional support that is available match the position of co-housing between activism and mainstream? The article opens a discussion about 'professional expertise' as a key realm of knowledge and practice that mediates individual groups' as well as the wider movement's legitimacy and expansion of cvo-housing. Expanding on Janda and Parag's (2013) 'middle-out' approach to building professionals working on energy performance, this study explores the roles, dynamics and paradoxes involved in the professionalization of this sector, as evidenced in four countries. It adds 'co-housing expertise' as a crucial yet neglected domain of academic inquiry to fully understand the choices, practices and contexts through which co-housing gets developed and adopted (or not). The results were first presented as a conference paper (ENHR 2016). The version below is elaborated by Tummers and with additional information on the Netherlands, to preserve the integrity of the thesis. A co-authored, 10% shortened version was submitted and accepted for review by European Planning Studies in August 2017.

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We are an interdisciplinary team with long-term engagement in cohousing through the lenses of sociology, critical human geography, economy, planning and engineering. We combine qualitative research methods with contextual knowledge about urban housing and planning systems, and building professions. All UK and US interviews were carried out by Fernández Arrigoitia and all French material was gathered by Tummers as part of a longer term investigation into self-managed housing and energy transition. Tummers organised the fieldwork in the NL and we interviewed some of the Netherlands participants together.

§ 10.1 Introduction

§ 10.1.1 Co-housing: emerging expertise

Housing is key to sustainability policies coming into effect, because it is 'the largest sector of building in terms of both volume and construction and energy use in the UK and Europe' (Stevenson, Barborska-Narozny and Chatterton 2016: 790). In some countries, these strains have ushered a surge in citizen-led experimentation with old and new forms of sharing economies, autonomous and ecological forms of living and more affordable housing models [Tummers, 2015b; Wohnbund 2015; Built Environment 2012; JAPR 2000]. One of the leading examples (re)emerging out of this context is cohousing- where its members seek more collaborative social forms of housing than what mainstream market currently offers.

A recent report on UK cohousing found that 'Cohousing could become much more widely adopted if planning, financial and institutional infrastructures enabled it (Jarvis, Fernández and Scanlon 2016). This corresponds to the evaluation of Dutch self-procurement policies finding that it wasn't the lack of demand or available plots (although this can be a local problem) but Dutch planning culture slowing down the sef-responsibiltiy of housing [SEV 2006]. Entering the field of housing production initiating cohousing groups also have to contend with practical elements such as land availability and high cost, choice of sites, the amount of new build that may be taking place at a particular point in time within a particular city or municipality, and complex planning and building procedures.

Co-housing initiatives often lack the social, technical and financial expertise required to articulate needs, obtain planning permission and bring projects to fruition within an otherwise mainstream setting. Groups also struggle to be recognised by established housing institutions. Planning and housing environments, for example, have little experience in engaging with citizens directly in the process of development, and future residents are typically considered consumers rather than producers or experts (Tummers 2015a). Traditional development partners (e.g., architects, housing associations and mortgage lenders) who become engaged in the development process may misunderstand fundamental values, risks and issues related to self-managed housing.

Set against the backdrop of co-housing's growing relevance as a sustainable living alternative- social, financial and ecological- this article explores the roles, dynamics and paradoxes involved in the professionalization of this sector, as evidenced in four

countries. We ask: in what ways is the cohousing sector 'professionalizing'? Does the professional support that is available match the position of co-housing between activism and mainstream? Our study opens a discussion about 'professional expertise' as a key realm of knowledge and practice that mediates individual groups' as well as the wider movement's legitimacy and expansion of cvo-housing. Expanding on Janda and Parag's (2013) 'middle-out' approach to building professionals working on energy performance, we argue that 'co-housing expertise' is a crucial yet neglected domain of academic inquiry without which we cannot fully understand the choices, practices and contexts through which co-housing gets developed and adopted (or not).

§ 10.1.2 Professionalising co-housing

Observing this dynamic in the course of other co-housing research, as well as requests from the field, prompted us to set up an international comparative study. We found would-be co-housers addressed these mutual knowledge gaps and practical impasses in a number of ways. A common one is to hire external technical consultants like traditional project managers and financial and legal advisers. These 'experts' or 'professionals' may however be insufficiently equipped to deal with the development particularities of cohousing which require the ability to move between and translate knowledge(s) of different kinds. The other, often complementary method is to draw on an emerging cadre of co-housing specialists (e.g., group-facilitators, process-management and legal coop-specialists) who have often developed their own co-housing projects and use this intimate experience, rather than formal training to advise other groups. This is a unique 'midway' position between activist and expert, stakeholder and professional, which carries its own tensions and possibilities.

To answer the researchquestions we carried out qualitative interviews and fieldwork between 2015-16 in the UK, the Netherlands, France and the US—countries that illuminate distinct stages of the development of cohousing as a sector. We apply a comparative approach recognising that while housing practices and attitudes can share similar features across Western contexts, the countries involved present significant differences in housing provision. These political and institutional contexts explain the specific national histories and local manifestation of cohousing practices and typologies. Differences appear particularly around homeownership and governance, including their 'professional' elements.

The article moves in four parts: the next section provides a brief background to our key-concepts 'co-housing' and 'professionalism' to frame the analyses. Section 3 presents empirical findings concerning professional development realted to co-housing in

each of the four countries. We identify the specific characteristics, motivations and roles of professionals in cohousing and places them in a comparative perspective, discussing issues and risks connected to the process of 'becoming' professional. The fourth section then reflects on the apparent contradiction between the bottom-up, democratising values of individual co-housing initiatives, and the institutionalisation of expert knowledge and professional practices. This, we argue, is a fundamental paradox that all co-housing professionals and consultants – and the collaborative paradigms which they operate within- must contend with. We offer a critical conclusion on what this raises for policy and practice in the sector, as well as for academic scholarship and discussions.

§ 10.2 Analytic framework: Co-housing and professionalization as key-concepts

§ 10.2.1 Co-housing typology and aims

Modern cohousing was developed in Scandinavian countries like Sweden and Denmark during the 1960s as a way to combine private spaces with collective facilities to enhance social activities and facilitate solidarity between neighbours. Since then, its typologies have been translated to countries as varied as Australia, Poland, Japan and the UK[102], with layouts ranging from small, low-rise clustered housing around a central courtyard to retrofitted country houses or high rise buildings with communal facilities. Projects are typically co-designed between residents and architects to reduce car-use, include individual private spaces (owned or rented) as well as a shared environment, called a 'cohouse', not always in the 21st century, more 'pragmatic' branche of co-housing, the 'Baugruppe' (or, building group[103]). These projects mostly have an active environmental agenda using sustainable construction and design techniques, motivated by health, costs of energy and concern for the living conditions of future generations.

102 In the European context, where the expansion of cohousing like developments and their study has been substantial in recent years, the umbrella term 'collaborative housing' is currently being used to encompass all resident-led housing initiatives

103 the term indicating its origin in German towns

Senior-specific cohousing schemes (over 50s) are also becoming popular as a non-institutional form of communal ageing in place that can help prevent dependence on family members or intermediate options such as 'assisted living' or 'extra-care'; and is expected to enhance quality of life while reducing public costs (Andresen & Runge, 2002; Baars & Thomése 1994; Brenton 2013; Chan & Ellen 2016; Choi 2004; Durrett 2009; Glass 2013; Labit 2015)[.].

Thus, co-housing is a plural phenomenon with multiple voices and manifestations. But despite the differences between and within countries, c-ohousing everywhere emphasises residents' engagement with all stages of housing production- from planning, design and building to internal governance and future maintenance.

Cohousing projects can be created by a group of assembled individuals who act as developers, or it can be generated by other kinds of 'mid-way' developers like housing associations, corporations or non-profit organisations. On rare occasions, an for-profit developer (individual or corporation) is involved (most commonly in the US) (Durrett and McCamant 2011). In the latter case, the developer's role can vary from finding interested members or working with a pre-existing group (giving them more or less control over the development process) to develop the construction site and deliver the project.

People's search for alternatives to the traditional housing offer like co-cohousing is also a response to government increasingly offering support for community-oriented schemes, and some housing associations are genuinely interested (and investing) in the possibilities cohousing may offer them. But such backing, in turn, is often part of a broader financial austerity regime that has promoted the 'handing over' by government of many of the social tasks previously afforded to it to non-state actors—whether private sector or civil society—via policies like Big Society and localism in the UK, or the Participative Society in the Netherlands. On the other hand, public authorities stimulating local initiatives may be accused of distorting market conditions. Lloyd et all [2015] point at the embracing of 'self-build' by the neo-liberal UK government. At the same time, cities like Berlin for example are struggling to ensure that access to 'DIY' housing is truly accessible, and not only possible for the well-educated, affluent and able-bodied [Droste 2015].

Advocates tend to see cohousing as a positive alternative to the status quo, offering on the one hand potential savings to residents and governments in the form of community-driven initiatives and social or health care costs; and on the other, a social alternative that through its emphasis on cooperation can counteract (or at least mitigate) some of the pernicious effects of an individualistic and isolating capitalist world. But except for some notable exceptions (see: Droste, 2015; Fromm and de

Jong 2009; Winter and Dorett, 2013), the constraints for developing affordable and accessible cohousing for non-white middle class citizens in Western countries can make cohousing, in practice, appear exclusive and for a privileged segment of society. Its detractors have argued that 'cohousing may engender some of the same problems usually associated with other kinds of private residential communities (e.g., social, ethnical and ideological homogeneity of inhabitants; lack of integration with surrounding neighbourhoods)' (Chiodelli and Baglione, 2014: 20; Kurt and Blossfeld, 2004). Self-build, for instance, is often seen as 'an opportunity for higher income individuals to express their free choice' (Lloyd, Peel and Janssen-Jansen 2015: 26) but this refers mostly to individual self-procurement. On the one hand, co-housing can help society move away from conceptualisations of housing as a 'commodity' and put citizens in control of its production, which requires a different attitude of professionals. On the other hand, there is a need to critically interrogate its inner mechanisms (of selection, for example) and socio-economic stratifications to avoid involuntary exacerbating some of the individual wealth inequalities and social exclusion. This puts additional demands on the creativity of the professionals involved. It also raises the question in how far professionals can be expected to take position, or even responsibility for such exclusionary mechanism?

§ 10.2.2 Perspectives on professionalisation

The mechanisms and structures of cohousing, as a niche market, sit both within and outside the mainstream. The landscape of professions (see Table 2, after section 3) is therefore diverse, and ranges from more traditional occupation to emerging and alternative ones. In their lifespan groups call upon a range of experts and advisers during different stages of development, including:

- financial advice (for revenue capital, forecasting expenditure and costs);
- legal guidance (for property, tax, contracting and governance);
- built environment experts (architects, landscape people, raft of survey materials);
- housing enablers (policy, regeneration, health and social care); and
- construction experts (structural, civil or landscape engineering; planners).
- In the European countries, a variety of professional titles and descriptions are emerging alongside traditional housing professions, from architects to 'group dynamic experts' who are expanding their roles to that of initiators, developers, moderators and project management of co-housing.

Hughes and Huges (2013) emphasize the individual, subjective nature of professionalism and point to the relevance of codes of conduct, issued by professional

institutions. For professionals specialized in co-housing, such institutes do not yet exist- although we demonstrate they are emerging. The question arises however in how far co-housing constitutes a new field of expertise: surely the structural engineers can construct safe premises, also when the client is a group of households united in a coop or other? First we need to establish what is different about the type of professionals that is needed for co-housing, and apparently not available in mainstream. From the intervieuws we derive that both additional skills and different knowledge are needed- but in most cases, it concerns a change of attitude and the manner of applying professional knowledge. Working with co-housing as a collective client involves for example understanding group dynamics and decision-making, but those are also useful faculties when operating in a co-creation team, as is increasingly the case in building and engineering.

Becoming a professional also involves a history of involvement with or exposure to academic and/or trade-based work. Practice is always at least partially hinged on such backgrounds, but also for cohousing, on personal housing experiences. These trajectories may be vastly different to one another across and within countries, but they converge at the moment when individuals get recognised and accepted as 'experts' in a particular field or occupation. Identifying general patterns regarding personal incursions into the cohousing field helps to further ground our understanding of the trends and environment that have supported or blocked their professional development. This understanding can also help generate the design of more appropriate training and support mechanisms into the future- as we explore in more detail in the conclusions.

Janda and Parag (2013) explore the question of the (potential) role of professionals in the context of change, specifically energy transition for residential environments, Their approach provides useful elements to further analyse co-housing professionalisaton:

First, in relating the professional status to a socially accepted problem [p.41]. Relating this to co-housing, the scarcity on the housing market has intensified the sense of urgency to find alternative ways of housing provision. Parallel to this increased demand, the co-housing specialists acquire new status.

Second, professionals are the middle agents between political context and the physical reality of a building [p.42] In the case of new housing models such as co-housing, design proposals need to be fitted into existing institutional frames. This may include recognising that a group of residents can be a client for a developer, instead of a housing association or investor. For this paper especially relevant is the planning system co-housing projects develop in, characterised by *Servillo & van den Broecke (2012:43) as 'the capacity of a system of rules, competences and practices to steer*

spatial dynamics.' The authors see, 'The processes of institutional change connected to a planning system (...) as complex, path-dependent and path shaping reflexive–recursive dialectic of actors in relevant social groups, and planning systems in institutional frames, guided by multiple social rationalities rather than a technical one.' (2012:56)
The new demands of co-housing projects may affect these jurisdictions in terms of roles, or shift emphasis in content for example claiming low-impact housing, shifting the boundaries of housing standards.

Third (here Janda and Parag follow Abbot XXX) there is a system of professions with established, self-defined 'jurisdiction'. established professions such as engineering, urban planning and architecture are subject to strict codes of conduct and regulations generated through 'professional' associations—a kind of circular self-sustaining system that, in the planning of cohousing as an alternative form of production could be limiting and counter-productive.

Finally, knowledge transfer in itself is not necessarily a challenge to the system. Professionals have room for autonomous action but are also required to develop their own ethos. This relates to the question in how far the professionals need to identify with ideas of inclusiveness, sustainability and so on of co-housing.

Before entering into a more detailed discussion regarding the roles and implications of cohousing professionals, it is necessary to understand the broad evolution of co-housing as a professionalised sub-sector, We took four countries under consideration, each in different stages of cohousing and its professional development can be attributed to a range of cultural, economic, social and political factors including (but not limited to): strong and supportive local authorities or housing associations; helpful regulatory regimes; favourable economic and policy environments; an impactful history of cooperative or counter-cultural housing movements; and the existence of entrepreneurial cultures. In the Dutch context has further identified a series of planning traditions that can act as barriers to the effective take-up of co-housing including:
design and building standards;

- the dominance of large housing companies and developers;
- the fact that deep-seated notions about the nuclear family household model inform the documents and procedures of architecture and planning, including energy performance calculations, energy company requirements and zoning plans; and
- the fact that legal, policy and planning instruments are not well adapted to non-traditional practices of shared property and collective development in cohousing. (Tummers, 2011: 154)

In the following brief country profiles, we refer to these factors inasmuch as applicable and relevant to the present state of co-housing. We discuss the countries in the chronological order of co-housing 're-emerging'.

§ 10.3 Comparative country overview

§ 10.3.1 The Netherlands: Centraal Wonen en CPO

Until recently, the Netherlands had the lowest percentage of self-development in Europe [Rigo, 2005]. Civil initiatives for customized collective (CW) and environmental projects began to emerge more strongly in the 1980s as a response to the changing demographic and sustainability needs that traditional housing design and development is ill-equipped to handle [Qu and Hasselaar, 2011]. CW projects typically offer apartments in a social rent regime, and as such are obliged to collaborate with officially recognised housing corporations. Initiatives for senior co-housing operated on the same basis, and have become a modest but-established part of the social housing structure. The co-housing initiatives from the 1990s benefitted from governmental programs and subsidies for sustainable building, which enabled them to surpass the standards of their time, for example in energy-saving. To do this, they often choose pioneering architects or consulting engineers, also developing vast knowledge themselves, shared in networks. Many of today's self-defined cohousing professionals (architects and social facilitators in particular) were some of the early 1970s and 80s pioneers of cohousing. Some contemporary projects continue to do this, facilitated by the introduction in 2000, of a national policy to stimulate home-ownership through self-development. increased mostly. While this is mostly targeted at individual self-build plots, collective housing strategies (the *Baugruppen* variety, in Dutch called Collective Private Commissioning or CPOs) developed by local authorities in partnership with housing institutes and resident groups, or as autonomous eco-initiative are increasingly re-emerging [Tummers, 2015c]. Despite the creation of new planning instruments (such as handbooks and subsidies) and agencies to mediate between self-builders and institutional partners the percentage of annual 'self-build' production remains below 15% [CBS 2014].

The eldest network. the cohousing federation (LVCW)- supports cohousing projects with knowledge exchange, but no longer does the consultancy work it used to in the 1980s. Personal experience also brought forth the first generation of collaborative

housing consultants, now established firms such as *BIEB* and *De Regie* [URL/footnote]. They offer expert advice on group dynamics and decision-making, as well as financial and legal models and project management. Most groups rely on architects, especially firms specialised in participative design and/or sustainable building for technical advice. A recent post-2008 development is (former) architects acting as (co-) developers, for example Kilimanjaro [URL/footnote]. The focus has shifted towards offering customized housing, more than on creating environments for alternative lifestyles.

The backgrounds of the experts we found for this research were besides the practicing architects, mostly in social sciences. Their interest in cohousing or 'cohousing-like' developments generally stemmed from anti-authoritarian visions and alternatives to mainstream housing for traditional nuclear households. Some professionals have also worked directly with municipalities to open up planning opportunities for co-housing, for example in new town Almere or urban renewal in Rotterdam. A consultant from one of these new self-build consultancy firms explained that 'the pilot stage' was over and municipalities were now more familiar and comfortable with the projects, treating private clients 'like corporations or real estate developers'. Ironically for cohousing, this suggests that a professional threshold is imagined as having been reached once the government (municipalities) treats groups in the same way as they do a private, for profit entity. In 2014, the Ministry of Economic affairs installed an Expert Team to assist local authorities in setting up infrastructure to stimulate self-building. See table 10.1 for an overview.

FIGURE 10.1 Cohousing architect and resident Flip Krabbendam...

FIGURE 10.2 ...explaning the design principles of cohousing Delft [pictures: Tussen Ruimte, 2015]

NAME	COHO BRANCHE ORIGIN	DISCIPLINE	SPECIALIZATION
WBVG	Installed 1992 as formal entity for self-management	Housing Association	Formal owner and service for self-managed projects, some former squats
De Regie	1996, after first self-commisioned housing project in Amsterdam	Process managers	Advises initiatives, municipalities and institutional partners (HA)
Steunpunt Anders Wonen	2005 established by Omslag	Network and education	Issues information through different media & events
BIEB (south NL)	? post-CPO policies	Process managers	Accompanies groups throughout the process of builsing
Tussen Ruimte	1999, out of experiences with dwellers organisation in urban renewal	Engineering	Technical advise for CoHo initiatives and their partners
Wono	Collab Aedes-Actiz Kenniscentrum Wonen-Zorg	Housing expert	Senior co-housing, housing & care
Hulshof Architekten	2001, introduced 'kluswoningen' in Rotterdam	Architecture, co-creation	Urban renewal and re-use of existing buildings
Linssen & van Asseldonk	Housing advisors since 1997; 2007 STAWON study CPO	Housing experts	Mediating between groups and housing associations, advise HA
Building Community	2010, based on CPO Zonnespreng exxperience	Process-director	Guiding initiatives through decisionmaking
Woongroepencoach	2011	Not specified	Coaching groups under the wing of housing associaitons
Bureau Ritsema	21010 COHo study trip	Architecture	design and research clusters and intermediate spaces
Kilimanjaro	2011, looking for alternative housing solutions	Architects and Developers	Finding locations, forming and advising groups, design and build especially for (affluent) 50+
IBBA support team	2012 by Municipality of Almere	Building engineers	to support IBBA participants
ICEB	2013, Info Centre self-development	Funded by Ministry of internal affairs and RVO	Networking and information
Expertteam Zelfbouw	2014 by ministry of economic affairs	Policy advisors and process managers	assist local authorities in setting up infrastructure to promote self-building

TABLE 10.1 Dutch consultancies for co-housing (Tummers, 2017)

§ 10.3.2 Cohousing in the United States

The first US cohousing project was built in 1991 by a pioneer couple in the style of the established Danish projects[104], (Killock 2014: 42). Clustered mainly along the western and eastern coasts of the country, 165 communities have since been established in 36 states, and another 141 are forming (US Cohousing Network). A key set of individuals across the country self-define as professionals or consultants that can help groups develop different aspects of their process. Of the four American interviewees in this project two were early pioneers who had lived in Denmark where they had been inspired by the cohousing model and decided to translate it into a US context. All had consulting-like jobs that ranged from from architects, developers, and project managers to group facilitators and marketing advisers; and some combined more than one of those roles. Some had strong environmental and ecologically oriented backgrounds that led them to work with cohousing in the first place. Having learnt facilitation skills in running and developing their own community, they can help others with these jobs. One consultant, for example, uses her +25 years of experience living in cohousing, as well as multiple professional engagements with the sector, to advice groups on all aspects. She often plays an important role in talking directly to banks, setting up investment structures, helping to get group members mortgages, advising on legal aspects and regulations – aspects, she said, groups can be rather oblivious to. Another had moved from being a volunteer community organizer, to being a paid marketing and outreach consultant (paid by a for-profit developer, to find groups and educate them), to becoming a developer and—due to both the financial crisis and personal circumstances—returning to her consultancy role.

This work performed by these consultants can be carried out locally with groups, but also often through long distance Skype meetings. They can be hired by groups as far as Canada to do either hour-by-hour work, a pre-set package deal over a particular period of time or a more bespoke approach to facilitation. Architects that specialise in cohousing can facilitate the participatory design process by bringing in the necessary local designers and getting groups to build the community while co-designing the physical space. Amongst others, they teach compassionate communication mechanisms to the group and train the local architects to cope with the facilitation process to avoid burnout. To them, this is not seen as training the competition, but rather as contributing to 'growing the pie' (interview, 2015).

104 Developments are more typically low-rise detached houses or attached dwellings with centralised communal facilities and peripheral parking- though design trends towards condominiums and more retrofit are shifting in recent years.

Unlike the other countries in this study, the US has a dominant culture of 'credentialism' (Collins 1979, 1981) that extends to the cohousing realm where facilitation certificates are granted by established professionals for things like consensus decision-making—the most typical for these kinds of communities. Individual professionals who cater to the cohousing sector advertise online as having certification in relevant specialist areas such as: Experiential Education/Group Leadership, Non-profit Management, Fundraising, Affordable Housing Feasibility, Project Management, and other professional specialties; others are 'Certified Passive House Consultant, LEED AP and Certified Green Professionals'.

§ 10.3.3 France: Habitat Participatif

In France, housing is predominantly based on private investment, framed by urban planning regulations on qualities such as energy performance and zoning. Affordable housing is provided by (very) few charities such as Fondation de France. The recent economic crisis led to speculative rises in house and land prices, and increased job insecurity for previously un-affected middle class groups who have also been linked to a growing environmental consciousness. This has contributed to the re-emergence of co-housing in the 21st century. Listed under the umbrella-term '*habitat participatif*' (HP, participative housing), projects can have different profiles in terms of inhabitants, legal status and building typologies [Bresson & Denefle, 2015, Biau 2011]. The number of grassroots initiatives has also increased sharply after the legal possibilities for cooperative property, abolished in 1973, were re-installed in 2003 [Denèfle 2009]. There are now numerous projects on the way, enhanced by robust networking activities [see, for example the French Federation of Cooperative Housing [www.habicoop.fr]. The first of the National Meeting of co-housing [rencontres nationalses de l'habitat participative) was held in in 2011, and resulted in a manifesto called 'whitebook on co-housing' which observes (authors' translation):

"*Seeing the complexity of setting up a co-housing project, the inhabitants generally need to surround themselves with numerous competences. Over the last few years, offers for professional support are multiplying and diversifying. Initiatives may choose to hire a 'compagnon' to mediate between politiciens, professionals and future residents, or they can choose to hire specific (legal, technical or economic) advise at specific moments during the realization process.*" [Euvrard, 2011:49]

The national, regional, and local co-housing networks that are in place usually lend support in the initial steps, whereas the professional project advisers specialize, according to training and backgrounds, in financial, legal or social matters. A sepecial

role is assumed by regional Consultancy for Architecture, Urbanism and Environment (CAUE)[105] by publishing handbooks such as: "Guide Pratique de l'Auto-promotion" [locatelli et al 2011] and organizing the network of municipalities promoting co-housing. As many regions have begun to consider co-housing a growing sector, the need for assistance to the building process is increasingly felt. Recognising the necessity that the profession develop with proper qualifications and training, individuals have organized themselves in a network of co-housing professionals, called RAHP[106]. The RAHP has a 'guide for co-housing' (*Compagne des projets d'habitat participatif)* that covers three domains:

1 social design,
2 real estate engineering and
3 process mediating

These are considered the major areas of service related to all project phases, from initial design, to move-in and management. Since 2012, the network also offers training to new professionals which include certificates that are not yet formally recognised[107]. To incentivise participation, participants can receive subsidies for the course fees though, for example, (re-) employment programs. Housing charities are now beginning to take interest in co-housing as a solution for low-income groups, the Fondation de France for example issued a research on suitable forms of (self-)organisation and target groups [Labit & Bresson, 2017]

§ 10.3.4 The UK: a new movement

The UK is at a comparatively newer stage of cohousing development from the three other countries in this study. Whitnessing this growth trend, there are now nineteen built communities and around sixty-five groups in development[108]. New-build cohousing began with Springfield Cohousing in 2004 and has been developing since.

105 CEAU, a semi-public regional institute aiming to support planning initiatives from private parties as well as municipalities with information, advise and training, see for example http://www.caue67.com/

106 Reseau Assciatif Professionels HP [www.rahp.fr]

107 http://www.toitsdechoix.com/activites/formation/11-activites/83-formation

108 See: http://cohousing.org.uk/cohousing-uk and http://cohousing.org.uk/groups

The construction of Lancaster cohousing[109] began in 2011, and LILAC[110] opened its doors in Leeds on 2014. Senior cohousing is becoming particularly popular (Dittmar et al 2016: 25), with its first new-build scheme OWCH[111] inaugurated in London on December 2016. .

As best practices like LILAC and OWCH get off the ground, architects, project management firms and some housing association personnel are increasingly self-identifying as experts (or supporters) in the field. The architects, project management team and legal and financial company that advised LILAC have also, for instance, used their experiences to continue working with other co-housing, or self-build and custom-build groups. In London, the architectural firm that co-designed the OWCH scheme is participating with a other local design firms to develop a research consultancy (called 'Appropriate Housing') to focus on community-led housing. Other experts are likely to be working under different umbrellas such as 'development trusts', 'empty homes' 'CLTs' or 'cooperatives'. One professional interviewed in this project who self-identified as working in/with the niche area of co-housing said that while 'there are enough people with overlapping interests that are getting traction [in cohousing], the grittier area of consulting is still quite new'. Except one, there are no company or organisations that labels themselves specifically in cohousing development support.

Inspired by Leeds Community Homes, and responding to particular local issues around land contamination, poor financial viability, ageing and low incomes, the North of the country is seeing the recent development of a regional citizen-led hub to generate a more robust social infrastructure that includes professional, skilled resource for transformative community-led housing schemes. A partnership model working alongside key organisations like the UK Community Land Trust Network, CDS Co-operatives, and the Confederation of Co-operative Housing has also been instrumental in the development of the, *Homes for Londoners Community Housing Hub,* launched by the Greater London Authority (GLA) on July 2017 as a public consultancy service that will advise groups on how to access land and funding, as well as offering technical and informational support.

109 app 30 units, http://www.lancastercohousing.org.uk/

110 Low Impact Living Affordable Community, 20 units http://www.lilac.coop/

111 Older Women CoHousing, 25 units inhabited since 2016 http://www.owch.org.uk/

TITLE	ROLE/DESCRIPTION	NL	FR	US	UK
Marketing consultant	Educating and informing people about co-housing opportunities; setting up short or long-term marketing programme for community.			X	
Development or procedural consultant/ 'building coach'	A type of profession (procedural consultant) who guides a group through decision-making and 'translates' the technocratic planning vocabulary. Responsibilities may include: Pro forma development Coordinate/manage entitlement process Manage design, pre-construction and construction phases Liaise with government agencies Owner's representation during construction Complex entitlement process on highly impacted site Coordinate with multiple State agencies Establish design parameters, budget and financial feasibility	X	X	X	X
Social consultant/Group or process facilitator/ coach	Provide personal and group consultations and technical assistance; offer perspective, knowledge, advice, as well as tools, tours, trainings, and referrals.	X		X	X
Outreach volunteer	outreach education		X	X	
Architects	Commissioned by the housing association, developer or the group itself to design homes with common areas; they sometimes also act as group and process facilitators.	X	X	X	X
Developers Investors	Can be a housing association, individual or group. If not the group, then developer negotiates with the group's wishes and realizes the residential complex.	X		X	X
CPO specialists	https://issuu.com/denieuwspeper/docs/dnp_zuid_nr15/1 (they will recommend who to the group	X			
Contractor	Carries out all aspects related to the construction/build/refurbishment;	X		X	X
Legal specialist	Advises on legal aspects or regulatory constraints	X		X	X
Unions and educational centres	Offer courses or seminars	X@	X		
Policy advisors	For local authorities	X	X		

TABLE 10.2 Cohousing professional/consulting typologies and titles {M. Fernandez and L. Tummers, 2016)

§ 10.4 Comparative findings on professionalisation

Both activists and professionals in France are strongly aware of the need to network and lobby. In this sense, 'professionalization' is stronger here than for example in the Netherlands or the UK. Anticipating a rise in co-housing as a form of housing delivery, an infrastructure is being built to equip professionals and local authorities to respond to residents' needs. Like in the Netherlands, this UK growing body of technical and

professional architectural expertise contributes through community facilitation skills and their ability to advocate for the sector and develop awareness. Many of the UK respondents also noted that there is a need for the cohousing professional landscape to connect more strategically with leaders in local authorities because a champion within an enabling council can bring in crucial capital revenue grant funding or help with planning conditions.

While in the US and the Netherlands, most professionals were initially motivated by belief in alternatives to mainstream forms of building, living or nuclear household typologies, the UK respondents in this project were moved by broader interests and histories in the social sector, as well as issues of welfare and sustainability. This does not mean that the counter-cultural imperative is not present here, but that the kinds of individuals encountered may be more 'traditional' in their own living practices and committed to public service than in the other countries.

In NL & UK, housing associations are potentially key professional development partners but their involvement can be complicated due to the fiscal and political environment that determines the possibility or scope of their engagement. Crises contexts, for instance, may lead to a reduction of their share of national grant budgets and affect their ability to invest in cohousing 'experiments'. In the Netherlands, the larger housing associations who have supported cohousing work find that standardized processes or communication styles for dealing with traditional 'clients' do not readily coexist with cohousing groups as active participants in the process. In the UK, this has led on some occasions to partnership breakdowns and the end of a development. Also, 'collateral damage' can be caused by state-imposed regulations, for example on housing allocation [Czischke, 2017]. So far the most outspokenly new emerging type of professionals seems to be the 'building coach' for co-housing initiatives, tantamount to a 'project manager' for larger building projects with so-called professional or public clients.

§ 10.5 Professional cohousing landscapes- old and new roles

What is paradoxical to the context of co-housing is the way professional 'knowledge' becomes embedded and legitimated within this niche 'non-conformist' sector that prides itself in resident and lay knowledge. All respondents felt it was crucial to hire professionals because cohousing initiators are not familiar with the formal jargon of traditional housing development. They valued professionals' ability to 'translate' cohousing knowledge to different stakeholders with the correct discursive repertoire.

§ 10.5.1 Middle Agents

The value of professionals is seen to be in their specialised and sympathetic translation of an alternative vision that not everyone in the mainstream understands. They can deliver the passion for the model to an outside audience with the correct 'professional' tone. The language and practices the 'new' professionals use fit in with cohousing, while enabling them to maintain their 'mainstream' jobs—a key form of flexibility or 'third space' [ref] for this professional sector. Hiring internally was seen to overlay all kinds of complications to an already stressful process. Especially the hiring of internal members as one Dutch architect argued, can lead to an abuse of their specialist knowledge and group's trust, making the whole process lack transparency. External professionals who are residents of other groups, on the other hand, were perceived as having the knowledge yet emotional distance to avoid irreparable group conflict, able to maintain the necessary distance and be the bad 'fall-to' person, if necessary. They can also provide useful advice about who would be best to hire under individual group circumstances. In other words, while understanding the culture and drive of cohousing was seen as a valuable asset -- a useful blurring of the lines between personal/ technical expertise of cohousing process and culture—*too much* personal engagement was seen as a conflict of interest that may detract from providing a professional service, or the perceived ethical values of professionalism in this sector. This is not unique to co-housing as a space that strives for autonomy and self-management. In their review of experimentation with direct democracy and horizontality in G8 summits in Scotland and France, Pickerill and Chatterton (2006: 12) made the case that, 'without well-trained facilitators, certain individuals dominated discussions and decisions. A heightened awareness of internal power relations is necessary for such spaces to run successfully'.

§ 10.5.2 Professional recognition and 'jurisdiction'

Groups often see professionals as an additional unnecessary cost and end up contracting for less hours or less activities to save money, at the same time that 'they'll spend endless hours discussing how hard it is to develop'. For professionals, whether employed or freelance, money and time are key issues to contend with. Project managers. Engineers and consultants charge a fee that depends on the service provided. Unless they have substantial amounts of capital to invest, professional donation of time and energy is not sustainable long-term. This reticence to pay externals, interviewees said, often has to do with groups' lack of entrepreneurship or business-orientated mentality. Groups may not realise that professional input can keep external fees down for example when they can bring in special prices given long-term

relationships with other experts. This discussion highlights the relative novelty of cohousing- both for groups and professionals, who are still getting used to the pace and time cohousing groups take to develop their projects. It may also explain some internal tensions and misunderstandings about the role and perception of professionals. Professionals see themselves, and not co-housers, as the ones that understand the niche cohousing business model, and emphasize that the merits of streamlining processes and saving the group time have not been fully integrated into the sector. Groups, on the other hand, may see the time they dedicate not as 'reinventing the wheel' but as an investment in their social outcomes, of value in and of itself. But the reluctance to hire or pay externals demonstrates that professional involvement is not yet a fully integrated part of the cohousing development system.

When professionals are hired, selecting the right one can be problematic. Group and development facilitators come onto the scene with great passion and enthusiasm for cohousing but often have very little experience of enabling community-led housing or of actually understanding budgets. On the other hand, those that do grasp these practicalities (say, architect or project manager) do not necessarily understand this particular niche in real estate development or how to work with groups. Informal arrangements and lack of experience present risks both for the architects and residents, such as unexpected delays, loss of investment, higher budgets or strained relationships. Even if a project gets built under these circumstances, that professional model of development is un-repeatable and knowledge is not captured for the future. For traditional architects with long experience in producing tenders for construction, including calculations, working alongside newer professionals like social facilitators can be also feel complicated. Hiring choices can therefore lead to frustration, broken professional relationships and burn out. Training (of young professionals) and education (schools teaching housing alternatives) were suggested as possibilities for countering these processes.

§ 10.5.3 Legitimacy

In all four countries, building professional **credibility** was raised as an important factor in the trajectory of cohousing. Professonals present themselfs online and connect to national organisations or associations representing cohousing. These repositories and communicators of information serve as a virtual legitimation of professional solidity. This is particularly important for individuals working autonomously at the boundaries of cohousing physical and social development. Many of the interviewees saw themselves as contributing a form of everyday lived knowledge that cannot be gained through formal training. Their belief, passion and commitment to cohousing

as a movement, often read through their own resident status or involvement in local networks, is seen as an informal qualification to be valued alongside other types of formal or specialised training. Specifically, those respondents that lived in cohousing at the time of interview felt that residential status grants them greater credibility with the groups they advise and a capacity to help with different processes ('I understand every aspect, and believe in what they do'). They said residential status was crucial because it kept them grounded in their professional roles as well as giving them their own space in which to be passionate about their cohousing community, which could help serve others better. This argument was not just about liberating their passion for cohousing elsewhere, but also – crucially- about the perceived objectivity of their work practice.

This concern for **legitimacy**, or 'status' through standardisation is not surprising in the context of groups seeking to justify their labour as a formal occupation, along with the resources and institutional support needed to support it. But encouraging 'professionalism' in co-housing through the setting of boundaries of knowledge and expertise does present a paradox[112]. A strict setting of parameters of knowledge and practice is in many ways antithetical to the values of cohousing as a DIY system of bottom-up, non-hierarchical self-management that values resident 'non-expert' knowledge. Some critical sociological discussions on the emergence of occupations as an ideological construct have described this as,

'...a process to pursue, develop and maintain the closure of the occupational group in order to maintain practitioners own occupational self-interests in terms of their salary, status and power as well as the monopoly protection of the occupational jurisdiction... seeking status and recognition for the importance of the work often by standardization of the education, training and qualification for practice' (Evetts 2011: 6-7).

While certification is a traditional form of professional legitimation, it can be seen as contrary to many of the working mechanisms and maxims of cohousing as a 'bottom-up' wholly democratic process, and product. The issue of training and certification brings forward the question of who gets to shape, design, and develop cohousing; a question not just of practice, but with consequence for the way and everyday logics or visions according to which the sector gets mainstreamed.

112 We utilise the word paradox here to highlight a condition of apparent opposites, rather than a problem requiring normative solutions. Our contention is that if co-housing is to remain a force that works within but against the traditional mainstream way of producing homes, then the inevitable tensions inherent to the paradox must be recognised and negotiated as a productive reality.

§ 10.5.4 Training

The demand for supportive knowledge as well as concern for its quality is leading the sector to develop training and networking: see table XX. In the US for example: An online facilitator training is available for Senior Cohousing as a Study Group workshop on 'Aging Successfully' that trains participants in 'inspiring and empowering seniors' to, amongst others, 'understand the economics of senior living choices', 'take charge of co-care, co-healing, and outside assistance', 'strengthen the bond between body and soul, individual and community' and work effectively to achieve common goals'. This language suggests the inclusion of a vast body of knowledge that can range from built environment and well-being to finance and spirituality. A seperate 'Training the Trainers' session is designed to create qualified senior cohousing facilitators. The individuals to be trained can range from individual initiators (i.e., would-be cohousers) and developers to advocates for seniors, leaders of senior housing organizations and educators. The substantive scope and target audience for these facilitation and training courses suggests an inclusive approach. One of the project's interviewees, who is also a cohousing pioneer, had recently begun an online training programme (called '*500 homes*') to teach a new cadre of professional project managers how to work with cohousing- so they can develop relationships with different developers and 'can help get groups to the stage where they have spent the money more effectively'. A key goal here is to create community of collaborative consultants because 'it's hard to be project manager out there alone'.

As co-housing continues to garner interest, especially as an option for seniors, in NL the amount and variety of co-housing- related professionals is increasing. However, there is no perceptible movement towards supporting the qualification or training of cohousing professionals as yet. This is distinctly different from the US, where certification is part of the discursive repertoire available to professionals, or France where the need to develop professional infrastructure was recognised from an early stage of the (re) emergence of co-housing. The RAHP course is more 'technical' presenting the state of the art documents and training skills for concrete social, process, legal and technical matters related to building. The French network also started the process for official certification in 2015, motivated amongst others that members can then benefit from education vouchers from employment offices. In Germany, collaboration with the Chamber of Architects was sought and participants reveive a formal certificate project-management for *Baugruppen* [113]. By involving both residents and professionals operating in relevant housing, social or education sectors,

113 https://www.akbw.de/fortbildung/ifbau/seminare/projektmanagement-baugemeinschaften.html last visited June 2017

the boundaries of who can be or become a cohousing professional are kept open. It implicitly accepts the desire residents have to lead their own processes- valuing their lay knowledge- as much as it recognises the need to incorporate a range of professional expertise into the cohousing development process.

COUNTRY	ORGANIZATION	TARGET GROUP	SUBJECTS	CERTIFICATE
Fr	RAHP	Professionals seeking to specialise in coho	Social, process mgt, legal and technical (related to building)	Preliminary, in process of official recognition (2016)
NL	BNA	architects	Project development (looking through the eyes of a developer)	Meets requirements of yrly schooling
	Expert team CPO	municipalities	Policy, facilitating resi-dents (communication)	Not applic
Germany	Architektenkammer BW	Architects and all profs seeking to specialise in coho		Official, from chamber of architects
Be	Samenhuizen	Facilitators, municipali-ties, initiators	Process, best practices, decisionmaking, money, senior, care, local policies	
US	Study Group workshop	Senior Cohousing	'Aging Successfully'	
	'Training the Trainers' session			
UK				

Table 3: training available for co-housing (interested) professionals [Tummers 2017]

TABLE 10.3 Training available for co-housing (interested) professionals [Tummers 2017]

§ 10.6 Conclusions: From middle-out Towards a 'lay' professional standard

In the countries studied, the interconnected nature of the ebbs and flows of their niche sector with the wider housing market, which had at times facilitated, and in other moments hindered their movement. Co-housing was seen they all saw it as still a very niche sector in need of maturity. To be a cohousing professional then means being able to successfully inhabit, travel across and coexist in different worlds of housing expertise. Individuals identifying as cohousing specialists straddle the ins-and-outs of mainstream and cohousing specific processes, which increasingly involves getting formal training and accreditation to legitimate this duality. The other form of legitimation is to have residential experience in cohousing, with this personal

investment seen as a form of passion that cannot be replicated through traditional professional contexts. The extent to which the cohousing sector was 'professionalised' in the sense of having many professionals formally or indirectly associated to cohousing does not seem to depend directly on the extent to the strength of the sector in each country. It also is not related to the extent to which national policies support these housing developments (by direct or implicit subsidy).

Professional accreditation and training that keeps individuals up to date and ensures they are giving the right advice are seen as increasingly important, especially as development processes, legal and financial structures are changing quickly. But the expressed need for 'quality control' could also be framed as a kind of gate-keeping in an emerging professional sector- where the parameters of belonging to the sector are being more tightly guarded and controlled by a select few. This is important because as a form of standardisation, or setting a recognisable bar, credentials can serve as entry into the field as a competent practitioner or 'knower' and as a 'trust-building social device' that builds public faith in veracity of professional claims (Brown 2001: 28-30). The credentials (certified training or education) needed to become a cohousing-specific professional (like social facilitator) are still not as onerous as a degree(s) (like engineering or architecture) but they do follow the same logic in that it favours objective knowledge and standards as a form of expertise, it serves to shield the individual from too much scrutiny once certification is complete and it grants the power to transmit (and reserve) the knowledge to those that are authorised to give credentials and legitimate other's competence.

Co-housing is an 'established niche' connected to and crossing over many different professional sectors. This means there are various vocational education paths it needs to be integrated in: technical, ecnomic and social specialists are required. From their own experience, living in the age of 'share economy' and BIG society, students ask to be equipped with the new professional tools. In such educational programs, the varied motivations, interests and aspirations of co-housing, and its constituent key-values, must be taken into consideration when developing a future cadre of professionals.

TEXT BOX 1

NATIONAL COHOUSING NETWORKS, PER COUNTRY

The US national cohousing association has an online portal that serves as a 'go-to' space of 'how-to' documents for would-be groups, provides a database with contact information for the distinct kinds of professionals that may be needed at one stage or another of development and allows visitors to filter according to 'finding', 'creating' or 'living in' cohousing. The web of ***the Fellowship for Intentional Community,*** a non-profit dedicated to promoting cooperative forms of living, also hosts vast amounts of cohousing specific professional directories, resources and search engines.

The UK Cohousing Network is actively working to support better integration of individuals with professional capabilities in the range of sector-specific projects and activities as a way of consolidating this growing housing sub-sector. New academic projects and multi-stakeholder collaborations are also emerging to support and promote community-led housing across the country.

The Dutch Cohousing Association (LVCW) has about 60 intergenerational communities under their umbrella – the National Association Central Housing and hosts an annual open day where 60-70 communities welcome visitors. ***The Dutch Senior Cohousing association (LVGO)*** has about 150 communities organised within the National Association of Senior Communal Living. There is also a Dutch Federation of shared/intentional housing (*FGW*) that operates on a voluntary basis to share its experience and offer advice and supports to existing residential communities, as well as to stimulate the creation of new residential communities and new variants of communal living. Information on French co-housing can be found on the site of *Habicoop*, la ***Fédération Française des coopératives d'Habitants*** and the network of frenc h cohousing professionals *RAHP*

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References professionalism

Benson M (2014) Creating a nation of selfbuilders. An interim report from the project Selfbuilding: the production and consumption of new homes from the perspective of households. London: Department of Sociology, Goldsmith.

Biau, Veronique, and Marie-Hélène Baqué. "Habitats alternatifs : des projets négociés ?" Paris: ENSA Paris-Val de Seine, 2010.

Bresson, Sabrina, and Sylvette Denefle. "Diversity of Self-Managed Cohousing Initiatives in France." Journal of Urban Research and Practice 8, no. 1 (March 2015): 5–16.

Built Environment (2012); special issue 38/3 edited by K. Krokfors on co-housing

Chiodelli, Francesco, and Valeria Baglione. "Living Together Privately: For a Cautious Reading of Cohousing." Urban Research & Practice 7, no. 1 (January 2, 2014): 20–34.

Collins, Randall (1979) The Credential Society: An Historical Sociology of Education and Stratification. New York: Academic Press.

——. (1981) 'Crises and declines in credential systems'. Sociology Since Midcentury: Essays in Theory Cumulation. New York: Academic Press.

Czischke, Darinka. "Collaborative Housing and Housing Providers: Towards an Analytical Framework of Multi-Stakeholder Collaboration in Housing Co-Production." International Journal of Housing Policy, June 20, 2017, 1–27. doi:10.1080/19491247.2017.1331593.

Droste, Christiane. "German Co-Housing: An Opportunity for Municipalities to Foster Socially Inclusive Urban Development?" Journal of Urban Research and Practice 8, no. 1 (March 2015): 79–92.

Evetts, J. (2011) A new professionalism? Challenges and opportunities. Current Sociology, 59: 406-422.

Fromm and de Jong 2009

Hughes W and Hughes C (2013) Professionalism and professional institutions in times of change. Building Research & Information 41(1): 28–38.

Janda, Kathryn B., and Yael Parag. "A Middle-out Approach for Improving Energy Performance in Buildings." Building Research & Information 41, no. 1 (February 2013): 39–50.

JAPR 2000 special issue 17/2 edited by D. Fromm on co-housing

Jarvis, helen, Kath Scanlon, and Melissa Fernández Arrigoitia. "Cohousing: Shared Futures." Newcastle upon Tyne: Newcastle University, 2016.

Euvrard, Anne-Laure, ed. "LE LIVRE BLANC DE L'HABITAT PARTICIPATIF 2011." Coordination Nationale des Associations de l'Habitat Participatif, 2011.

Lloyd, M.G., D. Peel, and L.B. Janssen-Jansen. "Self-Build in the UK and Netherlands: Mainstreaming Self-Development to Address Housing Shortages?" Urban, Planning and Transport Research 3, no. 1 (January 2015): 19–31.

Qu, Lei, and Evert Hasselaar, eds. Making Room for People: Choice, Voice and Liveability in Residential Places. Amsterdam: Techne Press, 2011.

Pickerill and Chatterton (2006)

Rigo (2006) "Tempo en doorstroming bij partikulier opdrachtgeverschap." SEV programma wat beweegt de woningmarkt? Rotterdam: voor SEV, January. rigo.nl. Keers, Geurt, and Johan van Iersel.

Scanlon, Kath, and Melissa Fernández Arrigoitia. "Development of New Cohousing: Lessons from a London Scheme for the over-50s." Journal of Urban Research and Practice 8, no. 1 (March 2015).

Servillo, Loris Antonio, and Pieter Van Den Broeck. "The Social Construction of Planning Systems: A Strategic-Relational Institutionalist Approach." Planning Practice and Research 27, no. 1 (February 2012): 41–61

Stevenson, F., Barborska-Narozny, M. and Chatterton, P. (2016) 'Resilience, redundancy and low-carbon living: co-producing individual and community learning', Building Research and Information, 44 (7): 789-803.

Tummers, Lidewij. 2015a "Understanding Co-Housing From A Planning Perspective: Why And How?" Journal of Urban Research and Practice 8, no. 1 (March 2015): 64–78.
Tummers, Lidewij, ed. 2015b The Re-Emergence of Co-Housing in Europe. London/New York: Routledge, 2015. https://www.routledge.com/products/9781138961258.
Tummers, Lidewij (2015c). "Self-Managed Co-Housing in the Netherlands: From 'alternative Community' to 'I (Build My) -House.'" In EUROPE: Cooperative Housing/EUROPA: Gemeinsam Wohnen, edited by Wohnbund: 44–53. Berlin: Jovis Verlag GmbH, 2015.
Tummers Lidewij (2016) The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research. Urban Studies 53(10): 2023–2040.
Urban Research and Practice 2015; special issue 8/1 edited by L. Tummers on co-housing
Wohnbund e. V. (ed.) (2015) Europa Gemeinsam wohnen | Europe Co-operative Housing. Berlin: Jovis.
Winter and Dorett (2013)

11 Conclusions

The aim of this study was to create deeper understanding of the current rise of collaborative housing in Europe, and what it could mean in urban policies addressing energy transition and climate change. The literature review brought forward major themes and indicated research gaps. On this basis, a series of thematic explorations were carried out, in different settings of cross-disciplinary exchange. The specific contribution of this study is the inclusion of the 'hardware': the design and engineering of co-housing. The thematic chapters make use of empirical material that was accumulated through a combination of professional experience, fieldwork in the Netherlands and international comparative perspective.

In the following chapter the central research question is answered based on the key-findings of each thematic study. The chapter first presents the conclusions for each subquestion and then resumes the central question: **How does co-housing contribute to the transition to a non-fossil energy system in housing?**

Part two of the conclusions addresses the question **how can this contribution be improved? It** discusses the relevance for practice and research of resident-led initiatives experiences, leading to recommendations and an outlook to the future of co-housing. Finally, the chapter offers a brief reflection on the research conducted.

§ 11.1 Conclusions related to the research questions:

§ 11.1.1 What is contemporary co-housing in Europe?

Based on empirical material, the study established:

What are major characteristics of co-housing in practice?

Contemporary co-housing initiatives rise out of lived problems, such as failing housing supply and high energy-bills for households. Today co-housing in Europe is mostly pragmatic but tends to amplify the meaning of 'value' beyond financial value of real estate, with an awareness of shared interests and the strength of collective action. Each

project forms a specific constellation of organisational, functional and design criteria. A Typical feature of the organisation includes establishing an organisational form that corresponds to the spatial entity (coop, residents association (RA), or other), which acts as client, commissioner or partner for external collaboration. During development and use, decisions are made collectively. Besides acting on behalf of the residents during design and management, the RA may be given the task of 'creating community'.

The RA realises a cluster of residential units for each household, with additional functionality, such as common services, (co-)working spaces, meeting and outdoor spaces.

A specific design characteristic is formed by the 'intermediate spaces' within the project. Semi-public hallways and corridors that join the individual units, and common spaces are primary examples of 'intermediate spaces'. They distinguish the project from urban surroundings and form 'soft' boundaries between project and the pubic realm.

How are the characteristics of co-housing different from mainstream housing?

The characteristics mentioned above also constitute the main differences between co-housing and mainstream housing. While the interaction amongst residents varies in practice, the collective aspect is formally organised. This organisation does not always mean that residents have final control over their living environments, as they depend on institutional partners and infrastructure, particularly during the building phase, and allocation of units. Especially in a rental situation, the associated institutions that act as landlord or formal owner tend to follow regime-rules. In the Netherlands for example housing allocation and income-rent regulations are highly centralised, which interferes with the capability of co-housing groups to select their members. In most projects, the individual units follow mainstream housing standards, imposed by the availability of building components and the regulations these have to comply with. Local authorities may address similar issues urban development policies that co-housing initiatives are concerned with, such as affordable and low-energy housing. Nevertheless, they do not always recognise the RAs as a coalition partner.

How is co-housing perceived in research?

Earlier studies mainly came from sociology and geography. The interest from housing studies is growing, which links co-housing research to knowledge about institutional housing providers. The conceptualisation on co-housing in research is moving away from uncritical advocacy that perceives single projects as 'ideal' models.

Seeing co-housing as expression of deeper societal changes and new responses to contemporary global challenges, European researchers now look more at the structural forces that shape the projects.

The structural forces, or regimes, that shape co-housing initiatives in the European context have been found in the domains of:

- The interaction with planning systems, especially as instrument of gentrification *(e.g. Wankiewicz, 2015; Bresson and Tummers, 2014 Biau and Baqué, 2010; Seyfang, 2008)*
- The role of local government *(e.g Boonstra, 2015b.; Droste, 2015; Duivesteijn, 2013 ,Kramer & Kuhn, 2009; Kuenzli and Lengkeek, 2004)*
- Concepts related to tenure and property including that of solidarity *(e.g. Denefle, 2016; Labit, 2015; Maury, 2009; Fenster 1999,Klaus-Novy 1983)*
- The re-organisation of everyday life, questioning the separation between domestic and public sphere *(e.g. Sandsted and Westin, 2015, Vestbro and Horelli, 2012; Jarvis, 2011)*

Although important in co-housing practice, questions related to the demand, distribution and production of resources such as clean air, energy, and water have hardly been considered by researchers, with the exception of a few recent studies such as Stevenson, Baborska and Chatterton (2016). The interest in co-housing from technical disciplines, such as building technology and engineering, is still low. This lack of research is not proportional with the importance of the technosphere for the Strategic Development Goals 2030 and the targets from the Climate Agreement 2015. Also, the 'hardware' is the most expensive and least flexible aspect of projects, as it involves long-term investments that need informed, future-oriented decision-making.

The absence of technical and quantitative data makes it difficult to establish if there is a potential contribution of self-managed co-housing to climate change policies and renewable energy targets that is substantial enough to develop local strategies. Therefore the second question was asked**:**

§ 11.1.2 How can 'low-impact living', specifically the energy-performance, be assessed taking into account the specific characteristics of co-housing?

This question is also answered in three parts:

Which specific (innovative) design and engineering solutions for low-impact living, in particular related to energy, does co-housing present?

In practice, the layout of individual units follow fairly standardised patterns, and shared spaces or services are seen as add-ons. A major quality of co-housing is its common or semi-public outdoor spaces: clustered parking, playgrounds, and gardens that contribute to reduced heat-stress, and facilitates meeting and motoric development for children. These areas are also the most used for environmental technology such as water recycling or purification, and solar energy. The technology as such is not innovative, but often co-housing projects act as 'demonstration projects' and the way it is applied opens a new perspective for engineering residential clusters (see below).

What are the methodological challenges for energy assessment of co-housing?

In general, Energy Performance (EP) calculation models have to account general problems of assessment, such as unregistered modifications of the design or lack of quality-supervision on the building site, and unpredictable forms of use. The benchmarking of projects is made more complex by the alternating building regimes that not only sharpened the EP requirements but also changed the calculation model, amongst others modifying the weight factors of several devices. These uncertainties also apply for co-housing, but in addition, there are specific methodological difficulties based on the differences with mainstream housing, particularly related to the intermediate spaces mentioned above and the mix of functions. Finally, the self-steering in co-housing enables for the fine-tuning of building materials, climate devices and comfort requirements, which together can have considerable impact on energy consumption. Chapter 8 therefore proposes a more integrated approach to assess energy performance, which is also applicable to other flows with environmental impact (waste, water, materials, food devices).

What are specific opportunities and risks of co-housing to achieve a 'low-impact' energy performance?

This thesis proposes two types of lessons as a starting-point for new engineering models:

First, organisational: co-housing residents form an association that remains involved (although not always in the lead) during the whole lifespan of the project: design, construction, operation and maintenance. This enables the sharing of everyday services such as laundry, heating, or other utilities. Common facilities can be more effective, as they are directly attuned to the user-requirements, c.q. the daily routines of the specific residents' group (i.e. young families, seniors). The existence of an association further allows for self-monitoring, which enables permanent (re)adjustment and input for collective learning processes, for example about reducing and recycling resources. Peer exchange and residents setting their own ambitions are renowned strategies that reduce the environmental impact of housing[114].

Second, building design and equipment. The residents' associations cannot optimise their environmental goals when the hardware does not match their patterns of use, specifically the shared services and common rooms. The (co-)housing cluster deserves more attention as intermediate scale between individual unit and district, because it offers specific possibilities for the dimensioning and design of production and distribution networks, examples of which are given below (Q3b). Key-conditions for such solutions to come into effect, the engineering of utilities and recycling systems needs to be suitable for operating by residents themselves. This involves technology in accessible places, visible and transparent metering and comprehensible interfaces.

§ 11.1.3 What are the institutional challenges of co-housing?

What has become very clear in this research is the impact of the institutional environment, such as criteria for building licence, housing allocation, spatial development priorities and subsidies, on the design of co-housing projects. The continuous dialect between (micro-) 'actors' and 'systems', in this case residents' initiatives and the housing market, produces hybrid forms of collaborative housing. Chapter 7 argued that this is an ambiguous development, especially in pressure-cooker housing markets such as Amsterdam. One

114 As several Dutch strategies show: Hier opgewekt, Milieu Centraal, Urgenda, Milieucoaches, Klimaatstraat, and so on.

recent example illustrates how institutionalisation dynamics pull towards a top-down instead of bottom-up logic (figure 11.1): the '*kollektivhus*' model[115] with reduced home-cooking facilities compensated by central kitchen is rare amongst co-housing in the Netherlands. But in 2016, the Amsterdam Architecture Centre ARCAM signals a trend towards smaller housing surfaces. ARCAM recommends compensating 'micro-lofts' with high-quality shared spaces and services. The main difference with co-housing and risk of such developer-led clusters is that they tend to become closed-off spaces, privatising semi-public space, as happens in shopping malls, in addition becoming financially inaccessible. The self-organisation that is typical of co-housing and vital for its resilience is replaced with an imposed set of regulations and requirements. This is rather typical for temporary situations of living together (e.g. student accommodation), than for long-term housing arrangements. Analysing the impact of the institutional environment is thus essential to understand co-housing and the ways in which it contributes, or not, to urban quality and sustainability goals.

Three thematic studies[116] explored the interaction between co-housing groups and their institutional environment. In order to answer this question, the implications are discussed for the local governance, technosphere and professionalism.

Which institutional elements hinder or enhance co-housing?

Architects generally see co-housing as a special category, for which it is difficult to match the requirements of the briefing with requirements for obtaining building license. The findings highlight planning conventions, and local institutional partners as principal barriers. While policies and the role of local authorities related to co-housing have been discussed for some countries, there is no study looking systematically at the institutional context of co-housing projects. Contrary to juridical and financial institutional context, very few studies on co-housing take into account the planning regimes that form the context for the building of residential clusters.

The interviews further revealed that planners and real estate developers emphasize the problematic sides of residents-involvement, seeing it as too unstable, short-term, short-sighted and small-scale oriented. The case-studies contradict these views: most realised projects are long-lived and some continue to be pioneers in common gardening, energy production, recycling or sustainable practices. But they do not do so in isolation: both for

115 Co-housing in Sweden, see Vestbro 2010 and www.kollektivhus.nu

116 Chapter 6: planning institutions; chapter 7: Dutch housing regime and chapter 10: professionalizing

organizational matters and to integrate in the neighbourhood, institutional collaboration and framing is inevitable. In many instances this can work well for both sides. For example, when planners understand the difference between co-housing and gated communities, they can formulate and implement criteria for the design of clusters, entrances, semi-public spaces, parking, lighting and other elements that border on the public space. Implementing the insights of sustainable urbanism, such boundaries can be shaped in such a way that the project is open, while its identity is clear and the green and recycling areas are protected. Further, local authorities would be able to apply realistic requirements for long-term sustainability when co-housing initiatives are seen as specific contributors to (global) sustainability goals, rather than as ideal model. The way in which the city of Tübingen has organised the selection for plots is an outstanding example: instead of going for the ''highest bidder' there is a fixed lease-price and the projects are selected for the specific urban qualities or target groups they propose. The procedure is arranged in such a way, that both professional developers and one-time initiatives can participate.

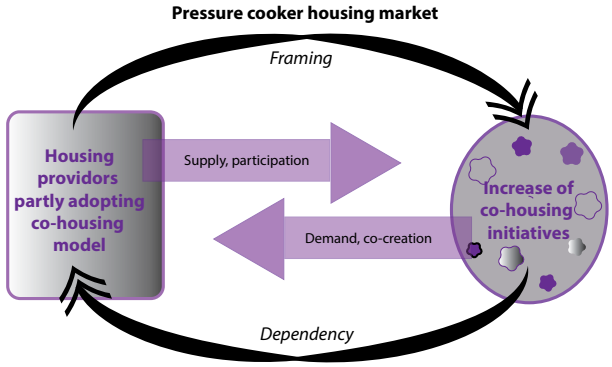


FIGURE 11.1 Co-housing institutionalisation dynamics pull towards top-down rather than bottom-up logic.

What are specific requirements and opportunities for engineering (concepts) in co-housing?

This research found a preferred location amongst co-housing initiatives an urban context with proximity to public transport, energy, water and waste infrastructure. Initiatives are prone to areas that allow reducing transport-dependency (integrating services or employment; sharing means of transport or trips, etc.). This calls for grid-related solutions rather than autarky (the 'eco-village' model). Yet the intermediate level of cluster allows for short cycles (partial autarky) for some items, such as the successful rainwater systems. It also opens a range of new possibilities

for decentralised energy production, in which the cluster mediates between source, grid and user. Through intermediate grids such as micro-heat networks and solar power circuits, new technical options for buffering, cascading and peak shaving can be applied. These options are especially related to the collective acting as 'client'. This thesis argued that new, cluster-related energy and recycling concepts could benefit individual households (reducing the energy bill) as well as make an important contribution to the Dutch Energy Agenda. The critical component is the concept of technology that steers the engineering concept. At this point in time, residents' associations and the professional/institutional parties have different opinions on the extent to which DIY and resident involvement is desirable, sustainable/durable and realistic. Equilibre housing coop, cited in chapter 4, published on such solutions at its tenth anniversary, proudly communicating its contribution to reduction of their water demand and CO_2 emissions. In these ten years, Equilibre grew from a 'one-project co-housing association' to a professional housing cooperative, where residents are members and all projects include low-impact technology.

What is the impact of co-housing on professions and professionals?

In each of the themes, the residents' associations are clearly not the only actors: mainstream (or: regime) institutions are populated with officials and professionals, independent consultants as well as architects and engineers. They all play a significant role in the trajectory from initiative to project. Chapter 10 discussed the new competences that are required for successful collaboration, such as widening the scope and adhering to group decision-making processes. The competences such as communication and the ability to work cross disciplinary are also increasingly called for by engineering or building parties, see for example the recent survey of KIVI[117]. Nevertheless, they do not seem to be met as yet, thus this study also found new professions such as intermediates or coaches. Seeing the early stage of professionalising co-housing, most consultants build on earlier experiences such as the creation process of the project they live in. Since 2012, the first training sessions have been offered and tentative certification has been on its way in Germany and France. Co-housing as a model of urban development has not entered the educational programs of urbanism or architecture as yet.

117 Dutch royal institute of engineers, https://www.kivi.nl/nieuws/artikel/vrouw-is-betere-ingenieur

§ 11.1.4 Resuming the central research question:

How does co-housing contribute to the transition to a non-fossil energy system in housing and how can this contribution be improved?

To answer this practice-oriented question, the work for this thesis involved the opening and exploration of a new field of research, namely co-housing as a contemporary pan-European phenomenon. It found that co-housing is varied in its form, but has common drivers and dynamics in most EU member states.

1 First, this research offers an articulation of co-housing, following its 'state of the art' in an international (European) and interdisciplinary scope Going beyond advocacy it places the co-housing trend in an institutional context, resulting amongst others in identifying different generations of co-housing.

2 Second, this research has brought coherence in a terminology that ranged from self-building and communities to collaborative housing, amongst other an international glossary (started with S. Bresson/Alter Prop) and a glossary for the Netherlands including 'hybrid' forms of co-housing. This was done in collaboration with a growing community of co-housing researchers, for which this study has been a catalyst.

3 Third, in emphasising the planning-related aspects the research has produced a better understanding of both the co-housing initiatives and the local strategies that support, stimulate or hinder their implementation. Planning-related data – for example: forms of tenure, the price per m^2 or the value per Euro that the housing offers, relation with public space – make visible and accountable the urban qualities, and the impact co-housing has on the neighbourhood. However, recognition of planning aspects is still rudimentary, and the fieldwork showed the limitation of access to such data. Especially in a 'historical' perspective (going back to the pre-digital age) data is no longer complete and archives have disappeared, together with the staff that might be interviewed about its experiences. As a consequence, generally the rationale underpinning policies involving co-housing initiatives is weak, and there is no benchmarking system in relation to the existing housing stock.

4 Fourth, establishing the absence of reliable quantitative data. For example, various sources estimate the demand at approximately 20% of the population – but on what grounds is not clear. Prognoses of demand should not be based on the number of initiatives, as long as co-housing is not an established category for statistical information. Even when accepted as one of feasible housing options, as is the case in Denmark and Germany, reliable sources on co-housing stock, let alone (latent) demand, are scarce. The fieldwork for this study indicates that on the longterm numbers for co-housing will stabilise.

5 Fifth, the study has made use of insights from gender studies, to analyse the relation between (co-)housing projects and planning systems. Feminists have for several

decades promoted 'time-space-family co-ordination' for planning agendas, and it is now at the core of EU Gender Mainstreaming policies (chapter 8). Historical studies show persistent synergies between sustainable and emancipatory ideas underlying the design of living spaces which Daphne Spain calls: "The ability to see beyond the economic superstructure and into the ecological and social infrastructures that support it" [Spain, 1995:365]. This statement is still valid today, and feminist planning proposals have not only stayed on paper. However, there is also a risk of spatial determinism: although the projects studied provide excellent living conditions, this is not a guarantee for inclusion, or of breaking with gender roles and stereotypes.

6 Finally, introducing the relevance of the techno sphere in co-housing research has brought to light the opportunities co-housing holds for climate change targets and sustainability goals. The resident groups confront spatial planners and engineers with an *innovative* strategy for demand-driven and diversifying urban design, which requires institutions to respond and eventually to adapt. When the RAs benefit from stimulation and experimentation subsidies they are able to implement and sustain low-impact technology.

The remainder of these conclusions zoom into the opportunities co-housing offers for sustainable housing, and the ways in which they could be better exploited.

§ 11.2 Relevance of the conclusions and outlook

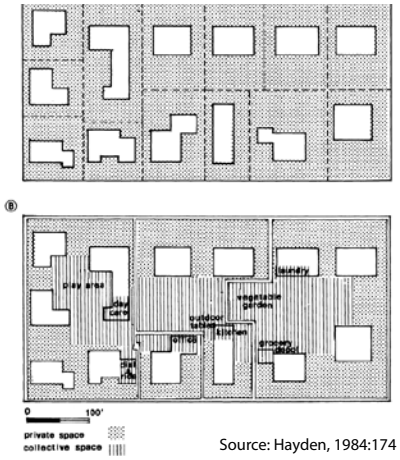
§ 11.2.1 Co-housing: small numbers, big impact

Not withstanding the small numbers, there are two domains where co-housing can become an important asset for urban development: design and maintenance of (semi-)public space for climate change mitigation, and the transition to a circular metabolism in housing. Co-housing as clustered, self-steered living environments can make positive contributions to the urban environment. If they are to grow in number, and continue to apply sustainability principles such as the recycling and *prosuming* energy, effects are to be expected in the *techno sphere* of urban infrastructure and the re-structuring of networks. Building on the characteristics of the co-housing initiatives found during the fieldwork, different types of effects on the physical environment can be expected, such as:

- Mixed use, adding programme in the direct environment; cluster and intermediate spaces can include small-scale, locally needed services, and enhance exchange amongst neighbours.
- Shared transport, trading parking lots for green space, which help reduce noise, fine-dust pollution and combat urban heat islands.
- Semi-public and common spaces: introducing intermediate zones the urban fabric that is suitable for appropriation and place making.
- Prosuming, modifying the energy and water flows by introducing local circuits; bringing added value in the form of play, biodiversity, identity.
- Local recycling Joint investment in renewable energy production creates rotating funds for the common spaces, reducing government dependency.

For both domains, the buildings as well as the surrounding open space, new design concepts are required. Several cities have successfully put in place planning measures to frame private initiative and public interest, but most build on the logic of individual homeowners, and zoning master plans. Rather than individual units and hard boundaries between 'private' and 'public', cluster-based solutions are called for that environmental impact in an integrated way.

Hayden (1984) has pointed out the way co-housing key-features could be transferred to the general housing stock in proposing HOMES (Homemakers Organization for a More Egalitarian Society). A typical sub-urban housing block is transformed to a co-housing similar model, in order to resolve the societal problems such as the organisation of daily routines, that later recurs in the co-housing initiatives motivations (figure 11.2). Fromm (1991:232) has identified a number of realised projects amongst which a row of houses in the Dutch town Groningen (Rensumaheerd) realised in 1983 and turned into co-housing 1993 (figure 11.3):



Source: Hayden, 1984:174

FIGURE 11.2 Transforming housing stock into co-housing, 'HOME' proposal for suburbia (source: Hayden, 1984:174):

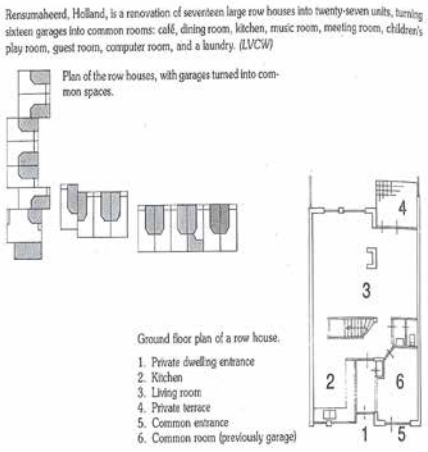


FIGURE 11.3 Collective use of parking spaces Rensumaheerd (Fromm, 1991:232

§ 11.2.2 Bringing the self-build and energy agenda's together

To integrate co-housing principles into the grain of the planning and engineering professions, it is necessary to abandon the concepts of 'autarky' and 'community' associated with co-housing. Instead, *co-housing must be seen as a social practice based on sustainable values, embedded in the urban fabric and a form of 'stewardship for the commons'*. In this sense, it is timely to relate resident-led housing policies to the Dutch Energy Agenda (as discussed in chapters 4 and 8). Energy production and distribution is highly technology dependent, and this technology connects different scales, from the (inter)national grid to individual home, and from large-scale supplier to individual user. The transition to renewable energy sources requires a new type of grid that responds to supplies that vary over time, from various decentralised sources. Domestic systems become part of the overall dynamic by acting as intermediate means for attuning (e.g. peak-shaving), buffer or storage (e.g. e-cars), or supplier (e.g. solar panels) as significant link in the chain.

In the design-phase of (co-)housing, options for energy sources and engineering are closely intertwined to the quality of living environment, for example the need for ventilation against the loss of heat in winter. Technically speaking, this principle is the same for *Vereniging van Eigenaren* (VvEs: co-property or condominiums). It is the process of co-creation that produces fundamentally different outcomes. Until now, co-housing initiatives have assembled households who seek high-quality residence

through acting together, whereas in condominiums dwellings are primarily seen as real estate, representing its owner's individual capital. Also, in general, the professionals supporting VvEs operate on a different mind-set, primarily steered by low-cost solutions and following mainstream regimes.

The forms of governance are directly related to the type of source and technology, which determines the scale of operation required to make the investment rentable[118]. After a period of privatisation, new civil movements are questioning the centralised structures and opaque decision-making of energy supplies. In the EU member states the number of REScoops[119] is rising to promote local and low-impact energy production. The smaller scale of coops generally shortens the chain from production to end-user. Involving the end-users makes such systems more transparent and effective, and enables low-energy forms of recycling. The REScoops demonstrate the benefits of cooperative models as established financial and legal structures, already common in Swiss self-steered housing.

Co-housing experiences show how anchoring RES production and distribution to housing clusters can be paired with collective learning processes and long-term commitments. REScoops and main energy-suppliers are currently experimenting with new forms of contracting and collaboration, to integrate small energy-producers into the main grid, thus creating a multiple-way, decentralised energy system. This corresponds to one of the 10 actions foreseen in European Strategic Energy Technology Plan (SET-Plan) 2015-2020[120], which aims to create more resilient (smart) networks rather than the current centralised, one-way system.

Co-housing can build on such experiences, adding a 'RES-hub' to the housing clusters that connects the cluster to the main: see figure 11.3. The flows needed, such as electricity, water and sewerage can then be produced, re-distributed and recycled within the clusters, using the main grid as backup. The health and safety requirements for such hubs can be derived from current larger-scale facilities such as schools, hospitals and care-homes, and adapted to the specific comfort standards and patterns of use of the residents.

118 for example: individual home-owners can install PV panels, coops can exploit a local wind-turbine, regional waste-companies might deliver to district heating and multi-nationals mine and distribute deep-earth fossil or heat-sources globally.

119 Renewable Energy Source cooperative actions https://rescoop.eu/

120 https://ec.europa.eu/energy/en/topics/technology-and-innovation/strategic-energy-technology-plan

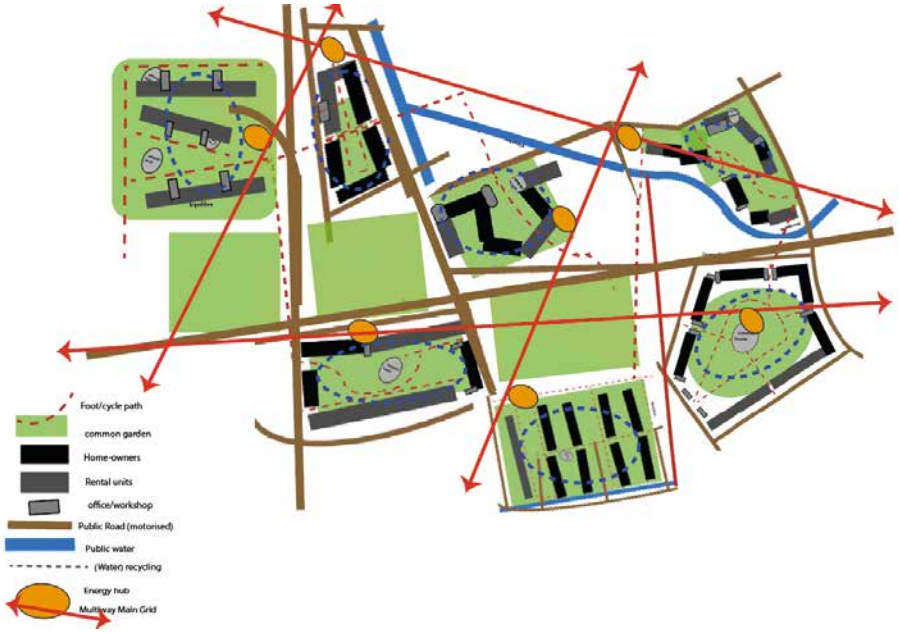


FIGURE 11.4 Urban scenario3: co-housing-REShub-urban infrastructure network

§ 11.2.3 Co-creation and the future of co-housing

What happens when a long-term urban strategy is adopted based on the core-values of co-housing: self-share-inclusive-responsible-circular? Based on this research, three types of scenarios are likely:

1 *A defensive approach*, in which groups of households with similar backgrounds create clusters, which are protected through hard boundaries such as fences, walls, and guardians. The so-called gated communities turn away from public space (the street) sometimes creating private services or open space [Ruiu, 2014] a defensive urbanism found in neo-liberal (conservative, populist) settings, where the urban land is subject to market mechanisms and cities in conflict areas (e.g. Istanbul; Latin-american or Chinese cities) resulting in socially and spatially fragmented cities. This scenario does not lead to 'co-housing' city because it ignores the principle of inclusiveness, and its fragmentation does not match the type of multi-way networks required for circular urban metabolism.

2 *A participative approach*, such as the sharing cities context, or the earlier example of EVA Lanxmeer (Culemburg). The local authorities facilitate self-organised housing, for example in Tübingen, Strassbourg and Berlin where plots are made available and initiatives invited to compete on quality. Without further support, mostly the groups already possess social capital benefits from this model [Droste 2015]. A programme such as IBBA[121] (Almere) services also households with moderate incomes. In this *participative* context still the individual home-ownership prevails, and the overall structure of the city is conceived separate from the housing projects. In many cases criteria are imposed to ensure that the projects are fitted in the direct environment, as fragments but not isolated. This scenario has the possibility to lead to 'co-housing' city bearing in mind that, as Boonstra stated: self-organisation is different from participation in that public authorities can never initiate self-orgnanisation.

3 *A co-creation scenario* looks at the city as a whole, governing its development in scale-related bodies in which professionals and end-users have equal positions. The larger scale translates the strategic development goals 2030 (introduced in chapter 2) into performance criteria for its components, amongst which, is co-housing initiatives. This approach is similar to the 1963 concept of '*vitale stad*' (living city) of urbanist Bakema (figures 11.5 and 11.6) and the method to design cities and regions based on clusters applying '*a Pattern Language*' by architect Alexander and his team(figure 11.7 and 11.8)..

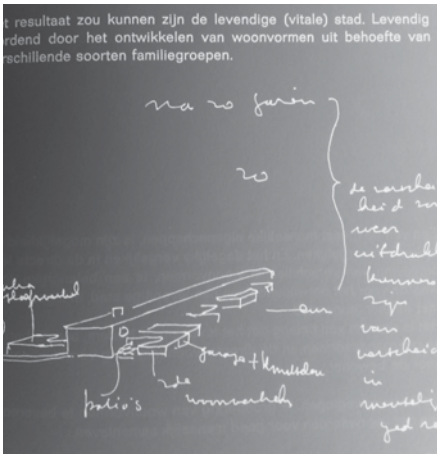


FIGURE 11.5 Bakema: 'the living city emerges from developing diverse housing types to fit the needs of different household groups' (Van stoel tot stad, 1963)

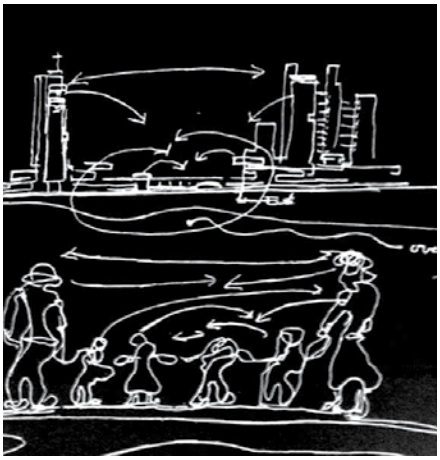


FIGURE 11.6 J.P. Bakema: The living city, from: Van Stoel tot Stad, lectures in Urban design (Delft, 1963)

121 see chapter 7 and http://www.ikbouwbetaalbaarinalmere.nl/

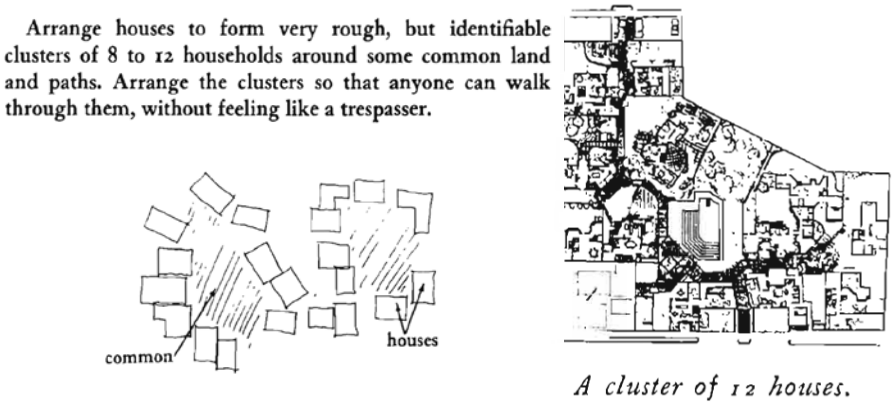


FIGURE 11.7 The cluster pattern typical for a co-housing scheme is also part of the 'pattern language' [source: Alexander et al, 1977:200-202]

§ 11.2.4 Updating 'A pattern language' for co-housing

The pattern language offers use-centred design criteria, and a method especially to connect clusters with adjacent scales. The pattern of a CLUSTER as described in A Pattern Language [Alexander et al, 1977:197] is rather prescriptive: the maximum number of households is put at twelve, around common land that is shared, owned and maintained by its constituent households, ideally in the form of a corporation. Corporation is a typical US concept; chapter 5 argued that cooperatives would be most suitable in the Dutch context. Alexander c.s. further states that Clusters should not too tight or self-contained, rough but identifiable clusters. This is relevant for the distinction between designing 'gated communities' or 'co-housing' which tends to prefer the use of soft boundaries. 'A pattern language' is also outspoken about the dimensions of each scale-level in terms of population: region 8.000.000 people; major city 500.000 people; small towns/communities 5-10.000; neighbourhood 500-1000p; housing clusters and work communities 30-50 p; families & workgroups: 1-15persons. [Alexander et al, 1977:202].

Embedding cluster-patterns in a larger pattern, following in the sequence[122], enables the design of 'living spaces' at urban and regional scale-level. Textbox A suggests how this method could work for scenario 3.

122 A sequence is an algorithm or recipe for describing which steps and decisions need to be taken and in what order for successful building. [https://www.patternlanguage.com/aims/intro.html last accessed 6 august 2016]

The pattern language formulated in 1977 provides an effective method to connect spatial scales, but needs to be updated when it comes to connecting process and physical design in the digital age.

First, the desire that "*each neighbourhood community or city is then free to find various ways of persuading its constituent groups and individuals to implement these patterns gradually.*" *(p5)* its diametrical opposite current sophisticated planning systems and presently, with much difficulty, sporadically implemented at very small-scale local level, of which co-housing is an expression.

Furthermore, the pattern language assumes that stability is needed to build community, and locates this stability primarily in property: "*all forms of rental (...) work against the natural processes which allow people to form stable, self-healing communities.*" *(p393)*

This goes against the societal tendency towards flexibility, and the stages in life for which rental is preferable, for example to be able to move according to job or partner, or to use the capital for other purposes than real estate. It also goes against the new philosophy of sustainability, which pleas for the end of property: see for example the work of Architect Rau www.rau.eu/. If manufacturers remain 'owners' of the products, leasing them to users, they will be more prone to performance-based design.

TEXTBOX A

CO-HOUSING SEQUENCE

Applying the method of pattern language as strategy for the co-housing city: beginning the sequence at neighbourhood level, the first guidelines are to create household mix in neighbourhood (p.188) The next step is to create degrees of publicness: quiet, in-between, busy types of streets and homes (p.193) Houses are then are grouped in 'rough but identifiable' CLUSTERS (p197) of max 12 hh, also described as (p.201) 'tiny, user-owned housing corporations'. Thus connecting substance and process, ideally, the ownership is in accordance with physical properties:
"Each group makes its own decisions about the environment it uses in common. Ideally, each group actually owns the common land at its 'level' (scale-LT). And higher groups do not own or control the land belonging to lower groups- they only own and control the common land that lies between them, and which serves the higher group. (...) each group takes responsibility for those patterns relevant to its own internal structure." (Alexander et al 1977:4)

§ 11.3 Reflections: looking back on the research and unanswered questions

The growing visibility of co-housing in different countries, and the variety of disciplines has enabled moving away from generic questions and beginning to adress specific questions related to engineering and spatial criteria. This study set out to measure energy-demand and consumption, as one of the major impact factors of housing. It found that although co-housing is on the forefront of experimental sustainability programs, however there is no quantitative evidence of its 'low impact'. Changing course, the study analysed why current formally accepted calculation models for energy performance are not sufficient for constructing such evidence. It proposes an alternative approach, integrating the technical and organisational specificities of co-housing, but it has not been able to substantiate the approach with reliable figures. In order to optimise the sustainable (or 'low-impact') design of co-housing, many flows need to be analysed, and calculated over the lifespan of the project or the devices and materials. In general, LCAs and indicators for water, material, energy and their waste flows are complex, and at best available for standardised situations. Co-housing clusters offer a scale that is not only overseeable in its dimensions (as opposed to districts and regions) but also represents the integration of such flows and new forms of combined production and consumption. It therefore offers a rich test-ground for new applications of sustainable technologies.

The lack of attention that cluster-directed design and engineering has received so far may be due to the perceived small impact. For example: if, according to the Dutch national policy goal, 15% of new construction[123] is self-developed, of which approximately 50% collaboratively, which 7,5% of expected production. Moreover, new production is replacing just a small part of the housing stock (<4%/year) hence the impact on the existing urban fabric is low. Should the prognoses of co-housing projects **all** succeed to build CO_2-neutral, zero-energy or even energy-plus buildings, with grey-water recycling and otherwise largely constructed in a circular way (ambitious goals on project level), this would mean improvement for a fraction (7.5% x4%) of the total Dutch housing stock. This constitutes a relatively modest contribution to the Dutch Energy Agenda and implementing the lessons should thus not be restricted to co-housing alone.

The crisis of housing associations at the time of the fieldwork, caused many staff to be unavailable or untraceable has limited the participation of mainstream professionals with co-housing experience in this research. On the other hand, 'new' co-housing professionals were well represented, and pointed the way to future developments. Co-housing initiatives depend on peer-collaboration, professional

123 demand prognosed at 80.000 units/year, EIB 2016 available at http://www.eib.nl/pdf/Investeren_in_de_Nederlandse_woningmarkt.pdf

support and institutional collaboration, which works better when they are given the room for manoeuvre and recognition of the voluntary efforts and expertise of RAs. The residents' associations do not have the same equipment or authorisations at their disposition that are granted to institutional partners, for example facility managers in condominiums or health institutions and care-homes. Hence, professionals need to assume new roles, as collaboration partners. The organisational aspects such as group decision-making and selection processes are beginning to crystallise and 'hard-ware' concepts that mediate between the individual resident and the overall grid and supply-disposal system which need to catch up with this development.

Finally, explorative studies clearly indicate that co-housing has started on a path towards mainstreaming. The scenarios sketched above represent the feared or desired image of what a co-housing based city could look like. On the one hand there is a scenario of fragmentation and segregation through the creation of enclaves (gated communities) that compete for residents with the most social capital. As amongst others Sassen (2016) has shown, the risk for fragmentation of the urban fabric is more likely to be found with large firms or investors than with co-housing 'enclaves'. On the other hand, there is the inclusive and participative city, where private space (/property) is reduced and where maintaining a high level of common and accessible services is the primary objective of planning. While this thesis argues in favour of facilitating co-housing initiatives, it does not see the participative city or region as an 'upscaling' or 'outscaling' of co-housing as a repetition of initiatives nor as a 'macro-co-housing project'. Moreover, investments in territorial development have a long lifespan, and transformation of the urban fabric is slow if it is to be based exclusively on residents' initiatives. What the projects demonstrate, is the need and the possibility for change in planning cultures, where thes are monetary-value based and profit-centred rather than use-value and sustainablitlty oriented. .

Mapping both positive and negative scenarios as 'Research by design' helps to understand the controversies of the 'we-city' model and its long-term effects. For example: How can planning confront and reconcile self-organisation with wider and longer planning horizons? Thus, the co-housing city scenario is not a new urban model, but a contribution that design can make to explore the spatial implications of sustainable cities. It gives urbanists some instruments to safeguard long-term sustainability objectives, for which the Strategic Development Goals 2030 and the EU COP energy and CO_2 reduction agreement are provide a political climate.

A change in planning cultures can not be brought about at project level, but institutions can enhance alterntive projects. In the scenario for the inclusive city, focus on the role of local authorities and professionals are vital. The requirements put on initiatives competing for plots, for example, must be proportional, fitting the projects into urban policies instead of expecting them to resolve problems at urban scale.

Activists, engineers and planners each work with the technosphere at a specific scale. The urban metabolism connects demand and supply of energy, housing, everyday services and so on, across the scales. To make collaboration between different *actors* successful, these need to be supported by cross-sectorial policies and anchored firmly in *systems* such as legislation. It is in this permanent dialictic that the balance is created between 'bottom up' articulated ambitions regarding the quality of living environments and large-scale investments in new, 'low impact', urban networks.

References for conclusions

Alexander, Christopher, Sara Ishikawa, and Murray Silverstein. *A Pattern Language Towns, Buildings, Construction*. 3rd printing 1979. New York: Oxford University Press, 1977.

Bakmea, J.P. *Van stoel tot stad, een verhaal over mensen en ruimte* Uitgeversmaatschappij De Haan N.V. 1963

Biau, Veronique, and Marie-Hélène Baqué. "*Habitats alternatifs: des projets négociés* ?" Paris: ENSA Paris-Val de Seine, 2010.

Boonstra, Beitske. *Planning Strategies in an Age of Active Citizenship: A Post-Structuralist Agenda for Self-Organization in Spatial Planning*. dissertation Utrecht University, 2015

Bresson, Sabrina, and Lidewij Tummers. "L'habitat participatif autogéré en Europe: vers des politiques alternatives de production de logements ?" *Metropoles* Politiques alternatives de développement urbain, no. 15 (December 2014). http://metropoles.revues.org/4622.

Denefle, Sylvette, ed. *Repenser La Propriété. Des Alternatives Pour Habiter*. Rennes (Fr): PU Rennes, n.d.

Duivesteijn, Adri. "De Wooncoöperatie: Op weg naar een zichzelf organiserende samenleving," maart 2013.

Fenster, M., 1999. Community by Covenant, Process, and Design: Cohousing and the Contemporary Common Interest Community. J*ournal of Land Use & Environmental Law* 15, 3–54.

Jarvis, helen. "Saving Space, Sharing Time: Integrated Infrastructures of Daily Life in Cohousing." *Environment and Planning* 43, no. 3 (2011): 560–77.

Krämer, Stefan, and Gerd Kuhn. *Städte und Baugemeinschaften*. Stuttgart + Zürich: Karl Krämer Verlag, 2009.

Kuenzli, P., Lengkeek, A.. *Urban Jazz. Pleidooi voor de zelfgebouwde st*ad. Rotterdam: Uitgeverij 010, 2004.

Labit, Anne. "Self-Managed Co-Housing in the Context of an Ageing Population in Europe." *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 32–45.

Ruiu, Maria. "Differences between Cohousing and Gated Communities. A Literature Review*." *Sociological Inquiry,* 84, no. 2 (May 2014): 316–35.

Sandstedt, E., Westin, S. Beyond Gemeinschaft and Gesellschaft. Cohousing Life in Contemporary Sweden. *Housing, Theory and Society* 32, (2015): 131–150.

Sassen, S.. Who owns our cities – and why this urban takeover should concern us all. *The Guardian 24-11*-2015.

Seyfang, Gill. "Grassroots Innovations in Low-Carbon Housing." ESRC. ISSN 0967-8875. The Centre for Social and Economic Research on the Global Environment (CSERGE), 2008.

Stevenson, Fionn, Magdalena Baborska-Narozny, and Paul Chatterton. "Resilience, Redundancy and Low-Carbon Living: Co-Producing Individual and Community Learning." *Building Research & Information* 44, no. 7 (October 2, 2016): 789–803. doi:10.1080/09613218.2016.1207371.

Wankiewicz, Heidrun. "The Potential of Co-Housing for Rural Austria." *Journal of Urban Research and Practice* 8, no. 1 (March 2015): 46–63.

Vestbro, DU, and Liisa Horelli. "Design for Gender Equality: The History of Co-Housing Ideas and Realities." *Built Environment* 38, no. 3 (2012): 315–35.

Appendix A Project factsheet

FACT SHEET SELFMANAGED CO-HOUSING PROJECT
STARTED DD: coloured fields are relational
UPLOADED TO FENG-OFFICE:DD.

Name of project			
website		**SUMMARY of project**	max 500 characters
town/village			
Code country	NL-		
Address			
: of initiative/registration of group			
nning/realization period (months)			
documentation:			

PROJECT PROFILE			**PLANNING conditions**		
Nature of registered statuts	max 500 characters		**Zone of project (urban environn**	C=city centre U=urban-existing P=périurbain S=suburb-VINEXwijk V=village R=Rural	CH=historical centre UR=ZUS/restruct PA=Agglomération SE=Ecoquartier VST=small town VE=eco-village
Partners	local/regional authorities housing comp other social agents		**Initiator of project**	private individuals local authoritees social agent professional network	
consultants/support	none network: Consultant (type): name of consultant:		**Date of transfer contract lease/rent/buy of plot or building**		
group stature	Association Cooperative indiv / VvE/ informal		**origin and present tenure of lan**	Acquiered property Lease/rental Squat/occupied assigned by public authority searching	
Phase of project	Initiative, not articulate In development/conceptual Under construction				
INITIATIVE			**building permit**	in preparation	obtained dd.
		(interested/potential	special restrictions?		
Initial Group, number of participar	active, steering group	members, support)	**Building works/ contractor**	app date start	app dat finish
METHOD OF « recrutement »	Network(s)	which?	**self-building**	all/part/finishing	
	Wide publicity	media?	**Date of occupancy**	app date	
	Cooptation		**Insertion in urban project**	none	
	Social criteria	which?		renewal/restructuring/revital/	
	Other:			Eco-quartier	
durability/stability of group	Group no change			Other:	
	Groupe in evolution				
	Rupture, Groupe renewed	when, why?			
financial constellation	description		**ARCHITECTURAL FEATURES**		
	Loan/mortgage	€	**Client**		
Fin.contribution (p.p./household?	investment €	monthly/periodical €	**Project management**	Firm (name)	Member of coop yes/no?
TENURE (buildings)	A-Association=owner		**Architect**	Firm (name)	Member of coop yes/no?
	B-Rented by Association		**Contracter**	eco-/partic/standard (evt Nom) :	
	C-Collective property		**Type of project**	New Construction	Rehabilitation *(former use?)*
	D-Individual rental		**number of dwellings/appartments**		
	E-owner-occup indiv (VvE)		**Total Surface of dwelling (SHON > norm-standardized EU?)**		
	F-Mixed Property		**Surface of plot**		
CULTURAL FEATURES			**occupation Coefficient** *(COS=SHON/surface terrain)*		
Insertion in network(s)	yes,	no	**Surface of individual dwellings**		
support, knowledge, exchange	name(s):		**Building costs (exc/incl VAT?)**	total project €	*inc/exl additional costs?*
religous or ideological	name(s):			per dwelling €	*inc/exl additional costs?*
GROUPE CHARTER?	yes/no	link to charter/file?	**self-building (partial -)**	if yes which elements	
what does the charter say about:			**ECO-CONSTRUCTION**		
Ecology			**construction standard**		
self-building			**building materials**		
self-management			**Isolation/energy saving**	standard/norm?	material/dimension?
Sharing			**ventillation**		
collective property/ownership			**Energy-sources**	(heating)	distribution-system/temp
Non speculation				(electr)	
Exchange of services				(hot water)	
noaburskip			**water**	recycling	purification
social mix (diversity)			**Type of housing**	appartments	
Mix of generations				town-houses	
Mobility: car-sharing, transport, etc				(semi-)detached houses	
Other				other	

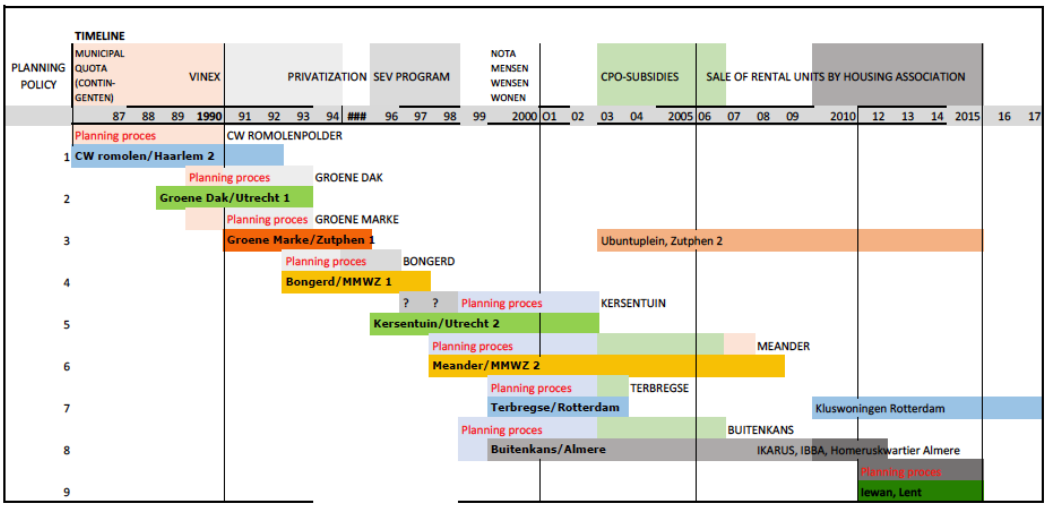
RESIDENTS	Type:	number:	**Functional programme**	Type:	number:
number of households			**Type of dwellings**	studio/bedsit	
total Population (# of residents)			if possible # for each type	2-room	
Household composition	single			3-room	
	single parent			4-room	
	couple, no children			5-room and more	
	couple+children		private	kitchen/	bathroom?
social Composition	class,		**communal & shared spaces**	1=outdoors, garden, bikeshed	
	background,		Specify function and m2)	2= community room	
	gender			3= guest room	
intergenerational	Non	oui		4= children/'s/play room	
(professions)				5=recreation (sport, cine, TV)	
Turn-over	#HH per year (or: to date)	% per year		6= domestic Launderette, kitchen,..)	
group life of inhabitants	social meetings		**total Surface communal spaces**	m2	
	shared time		**Mixed Use**	Co=Commerce, bureaux	
	activities			At=ateliers	
	outreach/ideological			Ki=children	
	other:			So=social ass/activ	
Organisation of group	commissions/working groups			He=health service	
	frequence managment meetings			Cu=culturel space	
	frequence plenary meetings		**Garden/outdoor**	Private	
	individual responsibilities			Collective	
	mandatory working days (#) ?			semi-public	
Accessibility, measurements	for handicapped or	seniors	**architectural specifities**	(max 500 characters)	

diss casussen
Individuele stijlen
Stichting Beheerinstelling Ro...
1-CW Romolenpolder
2- Groene Marke
3- Groene Dak
4- Bongerd
5- Goedemeent
6- Kersentuin
7- Terbregse.nl
8- Buitenkans
9- Meanderhof
10-IEWAN
WBVG Wilde Wereld
WBVG De Pontanus
WBVG Extrapool
WBVG Oude Wand
WBVG Hotel Bosch
WBVG Hommelseweg 39
WBVG Dobbelmannklooster
Poortgebouw
Vereniging Wonen Werken P...
Waterspin
Hof van Heden
CW Banierstraat
Amsterdam
Amstelveen
Heerhugowaard
Alkmaar
Hoorn
Schagen
Lelystad
Harderwijk
Amersfoort
Barneveld
Apeldoorn
Deventer
Kampen
Meppel
Steenwijk
Leiden
Delft
Gouda
Rotterdam
Dordrecht
Spijkenisse
Ede
Arnhem
Nijmegen
Emmerik
Doetinchem
Bocholt
Lochem
Raalte
Ommen
Hardenberg

Appendix B

Fieldwork / Summary of data for dutch case-studies

INHABITED	PROJECT NAME	TOWN	# UNITS, TENURE
1991	CW Romolenpolder	Haarlem	46, rental
1995	Groene Dak	Utrecht	66, mix
1996	Groene Marke	Zutphen	42, mix
1997	De Bongerd	Zwolle	36, mix
1998	Waterspin	Den Haag	39, mix
2001	Terbregse.nl	Rotterdam	48, home-owners
2003	Kersentuin	Utrecht	66, mix
2007	Buitenkans	Almere buiten	59, home-owners
2008	Meander	Zwolle	53, mix
2015	IEWAN	Lent	rental



				Co=Commerce, bureaux At=ateliers So=social ass/activ Sa=health service Cu=cultural space	1=garden, bikeshed 2=common living room 4=child-play 5=recreo (sport, cine) 6= domestic	A-Association=owner B-Rented by Association D-Individual rental E-Owner-group (VvE) F-Mixed Property		C=centre-ville U=urban-existing S=suburb-VINEXwijk V=village R=Rural	
iativ	**realised**	**Name**	**# units**	**mixed use**	**shared space**	**tenure**		**neighbourhood**	**archi-typology**
1987	1991	**CW Romolenpolder**	46	inhabitants only	1; 2; 3; 4; 6; 7	A	one living group		apartments
		http://www.cwrom.nl/extern/				D	family units		
		Haarlem					single appts		
1991	1996	**Groene Marke**		Co; At; En; So; Sa (huisarts); CU	1; 2; 4	F	17 market ho	S	terraced
		http://www.middenhuis.nl/vwz.html		common house external access			10 subsidized ho; 9 social ho		
		Zutphen					14 soc rental		
	1995	**Groene Dak**	66	Co (drukkerij); At; En; So; CU	1; 4; 5; 7	F	26 home-owner	S	terraced
		http://www.groenedak.nl/		common house external access			40 soc rental		apartments
		Utrecht					living groups		
1993	1997	**De Bongerd**	36	Childcare (independent co)		F		S	combined
		http://www.mmwzdebongerd.nl/			1;				
		Zwolle							
	2003	**kersentuin**	96			F	66home-owners	S	combined
		http://www.kersentuin.nl/		common house external access			28 soc rental		
		Utrecht							
	2003?	**Terbregse.nl**	*48*	Cu (=2)	1; 2 4 (office/ function room); parking	E- (VvE)	412 owners	S	terraced (modulair) apartments
		http://www.terbregse.nl/							
		Rotterdam							
1999	2007	**Buitenkans**	59		1;	H		S urban extension in nieuw town	terraced
		http://www.debuitenkans.nl/		common house (external access?)					semi-detached, single houses
		Almere-buiten							
1998	2008	**Meander**	53	So; (cu+En)	1,2(=5; Cu & CO)	F	32 ho)	S	mixed
		http://www.mmwz.nl/				21 soc rental ()			
		Zwolle							
		IEWAN	24	Co; At; En; So; CU	1; 2; 3; 4; 6; 7	H	social rental	S	apartments
	2015	www.iewan.nl							
		Lent							

	CW Romolenpold	Groene Marke	Groene Dak	De Bongerd	De Waterspin	kersentuin	Terbregse.nl	Buitenkans	Meander	IEWAN
# de logements	46	77	66	36		96	48	59	53	
Typologie	estate/flats	courtyard, mixed	courtyard, mixe	mixed	courtyard, mixed	mixed	courtyard, mixed	row/familyhouses	semi-courtyard, mi	estate/flats
Construction					50% renovation					
Beton/concrete										
steel										
wood (w.concrete floors)								prefab HSB		
straw/earth										
Isolation					nieuwbouw:					
principle Rc values	?	gevel-dak 3,5	Rc vloer 2,5;	gevel-dak 3,2		Rc vloer 4,0; gevel	?	?	?	
main materials	minerale wol						Mineral wool	?	Cellulose	
eco-materials		red cedar						clay (leem); Uula p	pavatex	
glass double, HR++, triple		HR en double	HR en double						HR++	
ıtermediate spaces/wintertuin						tochtportalen				
vegetation roof										
orientation						living south				
Heating										
individual										
central										
source										
Gas										
geothermal										
bois/pellets										
solar										
electric										
grid/waste						from el. Plant				
distribution										
punctial										
radiators										
LTS (floor, walls)										
air										
hot water										
combi (as heating)										
solar										
other						hot-fill optional			shower heat exchange	
electricity										
PV			optional	optional		optional		optional		
grid										
ventilation										
natural			inlet							
mech, classic			outlet			computerregulated				
mech, heat exchange								?		
Energy Performances [kWh/m²]										
EP norm (year building permit)		EP 1,2 (1995)	energy label B (A with solar)			0,7 (2002)				
monitoring / measured EP?			post-calculation W/E							
E-label (preliminary/calculated)										
Mobility		shared cars	shared cars		shared cars		shared cars			shared cars
shared trips	bike-facilities	bike-facilities	bike-facilities	car-free design	bike-facilities	car-free design		car-free design		car-free design
Management										
peak shaving										
recycling		rainwater system	rainwater system		rainwater system			rainwater system		rainwater system

Curriculum Vitae

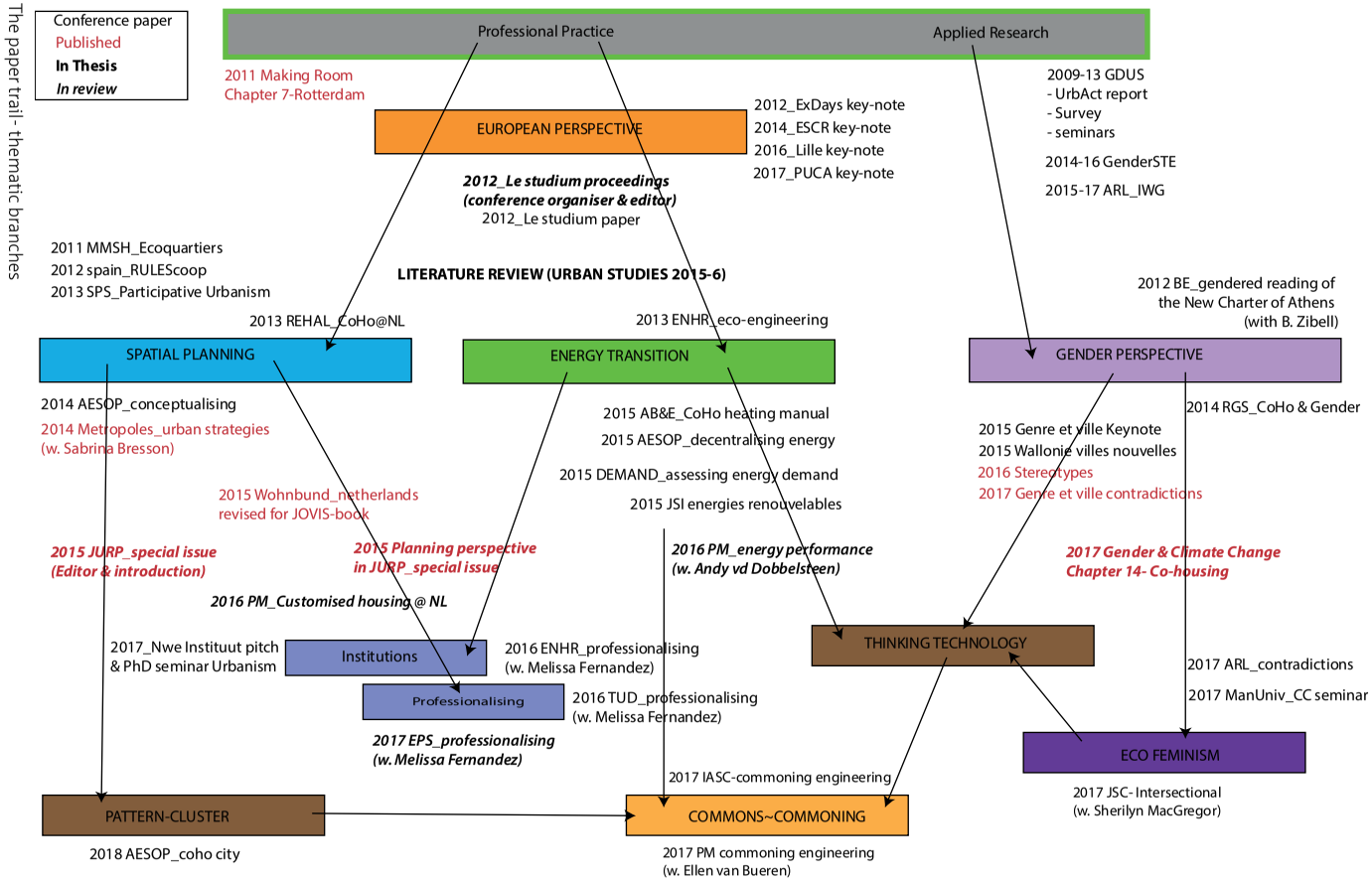
Lidewij Tummers graduated at the Faculty of Architecture and the Build Environment, TU Delft where she came back in 2006 to be a part-time tutor-researcher at the Department Urbanism. Between graduating as building engineer, and starting PhD research, her main occupation was in the practice of sustainable building and participative design. She is particularly interested in working as technical designer with end-users, to optimise the character and functionality of their accommodation at the lowest environmental impact. A second major interest is gender theory in spatial planning and engineering, and the position of women in related professions.

The questions for this thesis rose out of these interests as well as the possibilities for self-organisation in housing offered by post '*Mensen Wensen Wonen*'*124* policies. After the repeated experiences with ambitious self-housing groups finding themselves limited by the 'letter of the law' (c.q. Building Act) rather than enhanced by the intentions of environmental policies, and frustrated by the slow progress of low-impact energy neutral building, she felt the need to explore the structural dynamics surpassing project level.

After working for several architectural and engineering firms, in 1999 Tummers created *Tussen Ruimte* (Intermediate Space), independent designers and technical consultants specialised in sustainable, energy efficient renovation. *Tussen Ruimte* is based in Rotterdam, but operates in several European countries, where Tummers acts as consulting engineer on gender in sustainable spatial development for municipal and regional authorities, and 'Gender, Science and Technology' trainer for early stage researchers and for post-docs as well as for professionals and planning departments of cities and regions.

Tummers is founding member of the European network of experts on gender, diversity and urban sustainability (GDUS) and the European network of Collaborative Housing Researchers (ENHR). Since her return to academia, she has been lecturing and researching at several universities leading to lasting collaborations.

124 Memorandum published by the Dutch Senat on 3 januari 2001, containing the outlines of the (then) new housing policies


The paper trail- thematic branches
Conference paper
Published
In Thesis
In review
Professional Practice
Applied Research
2011 Making Room
Chapter 7-Rotterdam
EUROPEAN PERSPECTIVE
2012_ExDays key-note
2014_ESCR key-note
2016_Lille key-note
2017_PUCA key-note
2009-13 GDUS
- UrbAct report
- Survey
- seminars
2014-16 GenderSTE
2015-17 ARL_IWG
2012_Le studium proceedings
(conference organiser & editor)
2012_Le studium paper
2011 MMSH_Ecoquartiers
2012 spain_RULEScoop
2013 SPS_Participative Urbanism
LITERATURE REVIEW (URBAN STUDIES 2015-6)
2012 BE_gendered reading of
the New Charter of Athens
(with B. Zibell)
2013 REHAL_CoHo@NL
2013 ENHR_eco-engineering
SPATIAL PLANNING
ENERGY TRANSITION
GENDER PERSPECTIVE
2014 AESOP_conceptualising
2014 Metropoles_urban strategies
(w. Sabrina Bresson)
2015 AB&E_CoHo heating manual
2015 AESOP_decentralising energy
2015 DEMAND_assessing energy demand
2015 JSI energies renouvelables
2014 RGS_CoHo & Gender
2015 Genre et ville Keynote
2015 Wallonie villes nouvelles
2016 Stereotypes
2017 Genre et ville contradictions
2015 Wohnbund_netherlands
revised for JOVIS-book
2015 JURP_special issue
(Editor & introduction)
2015 Planning perspective
in JURP_special issue
2016 PM_energy performance
(w. Andy vd Dobbelsteen)
2017 Gender & Climate Change
Chapter 14- Co-housing
2016 PM_Customised housing @ NL
2017_Nwe Instituut pitch
& PhD seminar Urbanism
Institutions
2016 ENHR_professionalising
(w. Melissa Fernandez)
THINKING TECHNOLOGY
Professionalising
2016 TUD_professionalising
(w. Melissa Fernandez)
2017 ARL_contradictions
2017 ManUniv_CC seminar
2017 EPS_professionalising
(w. Melissa Fernandez)
ECO FEMINISM
2017 IASC-commoning engineering
PATTERN-CLUSTER
COMMONS~COMMONING
2017 JSC- Intersectional
(w. Sherilyn MacGregor)
2018 AESOP_coho city
2017 PM commoning engineering
(w. Ellen van Bueren)

Academic publications

Books

Tummers L (ed.) (2016) *The re-emergence of co-housing in Europe*. London/New York: Routledge.

Tummers L (ed.) (2015) *Taking Apart Co-Housing. Towards a Longterm Perspective for Collaborative Self-Managed Housing in Europe* Special Issue Urban Research and Practice, 8, no. 1 (March 2015). doi.org/10.1080/17535069.2015.1011421.

Tummers L and Niescken J (2012) *A different Way to Practise? Deutsche (Landschafts-) ArchitektInnen im internationalen Vergleich. A Transdisciplinary Project.* Weiter Denken, issue 2, Schriftenreihe gender_archland, Hannover: LUH.
Available from: https://www.gender-archland.uni-hannover.de/746.html.

Peer reviewed papers

Tummers, Lidewij (forthcoming*) From self-build to custom-build: appearances and impact of co-housing in the Netherlands1990-2015*

Tummers, Lidewij, and Melissa Fernandez Arrigoitia (forthcoming) *Professionalizing co-housing: A comparative perspective in France, UK, US and the Netherlands*

Tummers, Lidewij, and Andy van den Dobbelsteen (forthcoming*) Opportunities and risks of energy-systems in co-housing*

Tummers, Lidewij and Ellen van Bueren (forthcoming*) 'Commoning' utilities: the example of low-impact engineering in co-housing*

Hooimeijer, F and Tummers, L (2016) Integrating subsurface management into spatial planning. Experiences from the Netherlands, Sweden and Flanders. Urban Design and Planning (in print) DOI10.1680/jurdp.16.00033

Tummers, Lidewij (2016; online May 2015), *The Re-Emergence of Self-Managed Co-Housing in Europe A Critical Review of Co-Housing Research*. Urban Studies (53)10 pp.2023-2040 DOI:10.1177/0042098015586696

Tummers, Lidewij (March 2015) *Understanding Co-Housing From a Planning perspective*. Urban Research and Practice, 8,1: 64-78 DOI:10.1080/17535069.2015.1011421.

Tummers, Lidewij (2015): *Stéréotypes de genre dans la pratique de l'urbanisme*. la revue Genre, Travail, Société 17, no. 33 79–96. Guest editors: Mosconi, Nicole; Marion Paoletti, and Yves Raibaud

Baliga, Nikita, and Lidewij Tummers (October 2016) *Better Half of Bangalore. Improving Urban Conditions Forfemale White and Blue Collar Workers*. Territorio Della Ricerca Su Insediamenti E Ambiente. Rivista Internazionale Di Cultura Urbanistica 0, no. 16 147–64. doi:10.6092/2281-4574/3975.

Bresson, Sabrina, and Lidewij Tummers (December 2014) *L'habitat participatif autogéré en Europe, vers des politiques alternatives de production de logements?* Metropoles: Politiques alternatives de développement urbain, no. 15 http://metropoles.revues.org/4622

Tummers, Lidewij (April 29, 2013) *Urbanism of Proximity: Gender-Expertise or Shortsighted Strategy? Re-Introducing Gender Impact Assessments in Spatial Planning*. Tria Territorio Della Ricerca Su Insediamenti E Ambiente Rivista Internazionale Di Cultura Urbanistica 10, no. 1/2013: 213–218. DOI: 10.6092/2281-4574/1552

Tummers, Lidewij, and Barbara Zibell (2012): *What Can Planners Do for the Connected City? A Gendered Reading of the New Charter of Athens.* Built Environment (38)4 pp.524–39. DOI: https://doi.org/10.2148/benv.38.4.524

Tummers, Lidewij (2012). "Gender mainstreaming : l'urbanisme peut-il contribuer à l'égalité ?" *Politique, revue de débats* hors issue (October 2012).

Tummers, Lidewij (2012) "Nieuwe Huisvestingscollectieven: Duurzame Pioniers?" VHV Bulletin 39, no. 3 (mei 2012): 24–29.

Book chapters (reviewed)

Tummers, Lidewij (forthcoming) Co-housing design: New qualities through new housing coalitions? In: Sturm, U. and Lienhardt, M. (eds) «*Kooperation Bau und Raum, den Mehrwert interdisziplinärer Arbeit*» Lucerne University of Applied Science and Arts 2018

Tummers, Lidewij (2017) "Co-housing: a double shift in roles?" Chapter 14 In: Buckingham S and Le Masson V (eds), *Understanding Climate Change through Gender Relations*, London & New York: Routledge

Tummers, Lidewij (2017) "Les contradictions des perspectives de genre en urbanisme." In *Le Ville, quelle Genre? L'espace public à l'épreuve du genre,* edited by Emanuelle Faure, Edna Hernandez-Gonzalez, and Corinne Luxembourg, 16–34. Collection Penser le Monde. Paris: le Temps des Cerises.

Tummers, Lidewij (2015) "Selbstverwaltete Gemeinschaftswohnprojekte in den Niederlanden: von der ‚alternativen Wohngemeinschaft' zu ‚urban policies'." In *Europa: Gemeinsam Wohnen / Europe: Co-operative Housing,* edited by e.V. wohnbund, 44–53. Berlin: Jovis Verlag GmbH

Tummers, L.C., F.L. Hooimeijer, and L. Maring. "Polderen Tussen Regie En Loslaten: De Afstemming Tussen Bodembeheer En Ruimtelijke Planning Als Voorbeeld." In *Regie En Loslaten: Bijdragen Aan de Plandag 2014,* edited by G. Bouma, E. Vanempten, and C. Uiitenbroek, 229–42. Amsterdam: Stichting Planologische DiscussieDagen.

Tummers, Lidewij (2013) "Gendered Perspectives on Spatial Planning and Housing in the Netherlands." In: *—Fair Shared Cities The Impact of Gender Planning in Europe*, edited by Ines Sanchez de Madariaga and Marion Roberts, 107–31. London and New York: Ashgate.

Tummers, Lidewij (2012) Empowerment by Visualization: Experiences from Barcelona." In *Barcelona: Visual Culture, Space and Power*, edited by Helena Buffery and Carlota Caulfield, Chapter 9. Cardiff: University of Wales Press.

Tummers, Lidewij (2013) "Women creating places to meet and read: the 'Institut de Cultura i Bibliotéca Popular de la Dona', Barcelona and 'Dames Lees Museum', Den Haag." In *Estudios Urbanos, Género y feminismo / Urban Studies, Gender and Feminism: theories and experiences*, edited by Blanca Gutiérrez Valdivia and Adriana Ciocoletto, 443–53. Barcelona: Universidad Politecnica de Catalunya

Tummers, Lidewij (2012) "The Everyday as Spatial Development Potential." In: *Determinanten Räumlicher Entwicklungspotenziale*, edited by Carl-Hans Hauptmeyer, PM. Stadt Und Region Als Handlungsfeld 10. Frankfurt am Main: Peter Lang,

Tummers, Lidewij (2012) "How to Research Spatial Planning from a Feminist Perspective?" In Gender Kompetenz in Architektur Landschafts Planung. Ideeen Impulse Initiativen. Edited by Ruth May and Barbara Zibell, Weiter Denken, Schriftenreihe Gender_archland 3. 104–12. Hannover: Fakultät für Architektur und Landschaft der Leibniz Universität.

Tummers, Lidewij (2011) "Collectively Commissioned Housing: New Urban Qualities through Residents Self-Management." In: *Making Room for People: Choice, Voice and Liveability in Residential Places*, edited by Lei Qu and Evert Hasselaar, chapter 7. Techne Press.

Tummers, Lidewij, and Sylvette Denefle (2010) "European Network for Gender, Diversity and Urban Sustainablilty." In *Research Anthology 2010*. UNRA

Oxley, Michael, Tim J. Brown, A. M. Fernandez-Maldonado, L. Qu, and L. Tummers. "Review of European Planning Systems," 2009. https://www.dora.dmu.ac.uk/handle/2086/7536.

Conference Papers

Tummers, L. and M. Dabrovski (2015): The spatial implications of Energy transition. Delft, Department Urbanism

———. "Assessing Energy Demand in Self-Managed Clustered Housing," Vol. online 2016. Lancaster: The Demand Centre, 2016. http://www.demand.ac.uk/demand-conference-2016-papers/#space.

———. "Co-Housing: A Change of Roles? From Energy-Concumption to Production and Maintenance of Renewable Energy Networks." In *"Les Sociétés Contemporaines À L'épreuve Des Transions Énergétiques"*. Tours: François Rabelais University, 2015.

———. "Co-Housing: Pioneers of Eco-Engineering." In *Overcoming the Crisis, Integrating Urban Environments*. Tarragona, 2013. http://www.enhr2013.com/paper-submission/list-of-papers/.

———. "Assessing Co-Housing." In *Track 6*. Utrecht/Delft, 2014.

———. "A Different Way to Practice, Teaching Gender Competences in Spatial Planning." In *Future City - Diverse City Equal Opportunities, Planning, Participation: For Whom, by Whom, How?* Berlin: Senat department for Urban development and the Environment, 2013.

———. "Co-Housing: Selforganized Proximity." In *PROXIMITY ON THE MOVE Urban Times and Mobility: Infrastructures, Lifestyles and Everyday Practices in the Contemporary European City*. Milano/Bergamo: ENCiTi (European Network City Times), 2013.

———. "Les contradictions des perspectives de genre en urbanisme." In *Le Ville, quelle Genre? L'espace public à l'épreuve du genre*, edited by Emanuelle Faure, Edna Hernandez-Gonzalez, and Corinne Luxembourg, 16–34. Collection Penser le Monde. Paris: le Temps des Cerises, 2017.

———. "Logement autogéré aux Pays-Bas, correspondences et differences entre les années 1980 et les années 2000." In *Atelier ReHal « Coopératives et auto-promotion : une troisième voie pour le logement ?* Paris: Réseau REHAL, 2013.

———, ed. "Selfmanaged Cohousing: Born out of Need or New Ways of Life?" In *Selfmanaged Cohousing: Born out of Need or New Ways of Life?* Tours: Le Studium, 2012. http://http://alter-prop.crevilles-dev.org/ressources/items/show/1267.

———. "Gender mainstreaming : l'urbanisme peut-il contribuer à l'égalité ?" *Politique, revue de débats* hors issue (October 2012).

———. "Intentional Communities: Methods for Reviewing the Rise of Citizens' Housing Initiatives in a European Perspective." In *"Mixité" : An Urban and Housing Issue ?*, ENHR Workshop 17, session 5:7 pag. Toulouse, 2011. http://www.enhr2011.com/node/28526.

Stock, Katja, and Lidewij Tummers. "Contemporary Tools of Urban Development - Orientated on Equity?" In *REAL CORP 2010 Proceedings/Tagungsband*, edited by Vasili POPOVICH, Manfred SCHRENK, Dirk ENGELKE, and Pietro ELISEI, 13p. Vienna, 2010. – http://www.corp.at.